MODEL:

PCISA-945GSE

CPU Card with 45 nm Intel® Atom™ CPU, Dual PCIe GbE, 512 MB DDR2 Memory, SO-DIMM Slot, CompactFlash®, VGA, LVDS, HDTV and SDVO and Dual SATA

User Manual

RoHS Lead Free

Revision

Date	Version	Changes
January 22, 2015	1.11	Deleted J_AUTOPWR1 jumper information
May 27, 2009	1.10	SO-DIMM slot added
March 11, 2009	1.01	Updated product name
February 4, 2009	1.00	Initial release

Copyright

COPYRIGHT NOTICE

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

TRADEMARKS

All registered trademarks and product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

Manual Conventions

WARNING!

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously. Warnings are easy to recognize. The word "warning" is written as "**WARNING**," both capitalized and bold and is followed by text. The text is the warning message. A warning message is shown below:

WARNING:

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the PCISA-945GSE or personal injury to the user. Please take warning messages seriously.

CAUTION!

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the PCISA-945GSE. Cautions are easy to recognize. The word "caution" is written as "**CAUTION**," both capitalized and bold and is followed. The text is the cautionary message. A caution message is shown below:

CAUTION:

This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the PCISA-945GSE. Please take caution messages seriously.

NOTE:

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes. Notes are easy to recognize. The word "note" is written as "**NOTE**," both capitalized and bold and is followed by text. The text is the cautionary message. A note message is shown below:

NOTE:

This is an example of a note message. Notes should always be read. Notes contain critical information about the PCISA-945GSE. Please take note messages seriously.

Packing List

> **NOTE:**
>
> If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the PCISA-945GSE from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The items listed below should all be included in the PCISA-945GSE package.

- 1 x PCISA-945GSE PCISA Motherboard
- 1 x LPT and RS-232 cable
- 2 x SATA cable
- 1 x USB cable
- 1 x Mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

Images of the above items are shown in **Chapter 3**.

Table of Contents

List of Figures

List of Tables

BIOS Menus

Chapter

1

Introduction

1.1 Introduction

Figure 1-1: PCISA-945GSE

The PCISA-945GSE is a PCISA CPU card with an embedded 45 nm Intel® Atom™ processor. The embedded Intel® Atom™ N270 processor has a 1.60 GHz clock speed, 533 MHz FSB and 512 KB of L2 cache.

The PCISA-945GSE includes four graphics outputs. VGA on the rear panel provides basic output capabilities for use with most monitors. Internally, an LVDS header provides a connection to LCD displays for integrating the PCISA-945GSE into a system with built-in monitor. The TV header provides output to a standard TV or HDTV through the optional adapter cables, which provide a single cable connection on a card slot and a cable splitting the signal into the component parts. Finally, an SDVO connector provides a direct connection from the Northbridge SDVO port to an IEI SDVO graphics card.

512 MB of DDR2 memory is built-in and there is an SO-DIMM on the solder side of the board. Permanent storage is provided through dual SATA ports, offering 150 MB/s transfer speeds. Legacy IDE connectivity is available through an IDE port, and through a CompactFlash® card located on the solder side of the PCISA-945GSE.

Other connectors on the PCISA-945GSE include six USB ports (two external, four internal), an RS-232 port, an RS-232/422/485 port, LPT and digital I/O. An HD Audio connector connects to an external audio kit, providing HD audio or AC'97 audio capabilities with the appropriate audio kit.

1.2 Overview Photo

The PCISA-945GSE has a wide variety of peripheral interface connectors. Figure 1-2 is a labeled photo of the peripheral interface connectors on the PCISA-945GSE.
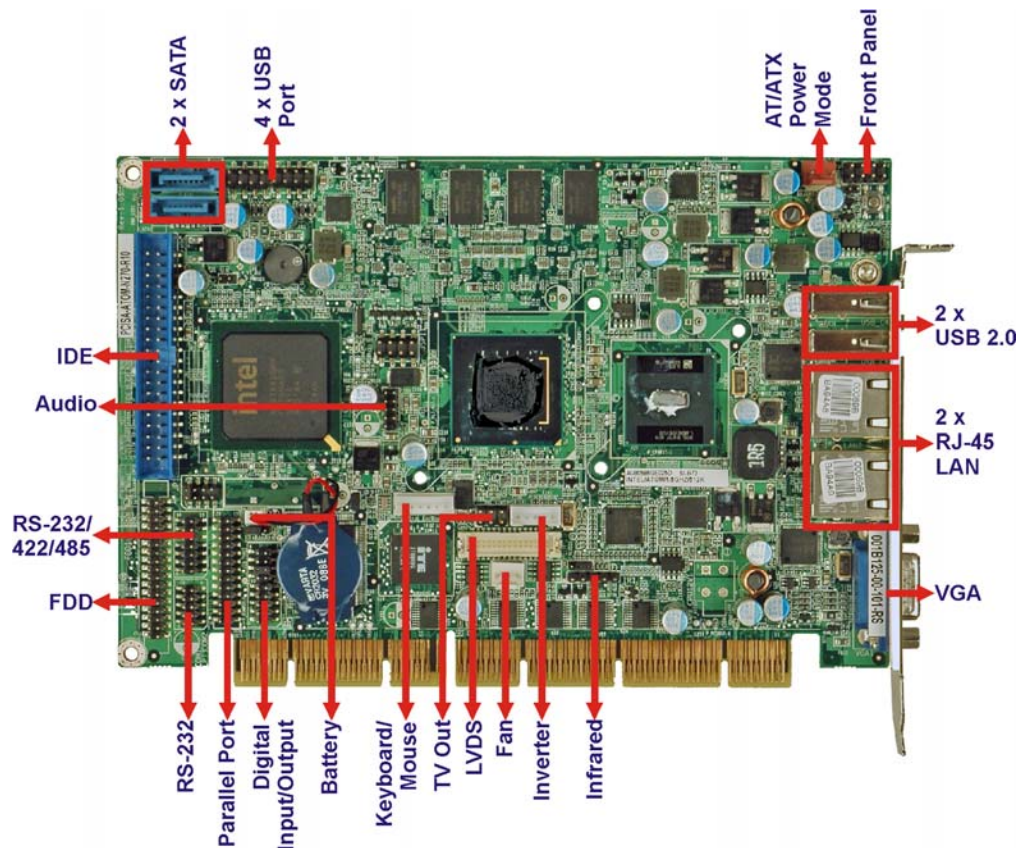
Figure 1-2: PCISA-945GSE Overview (Front)
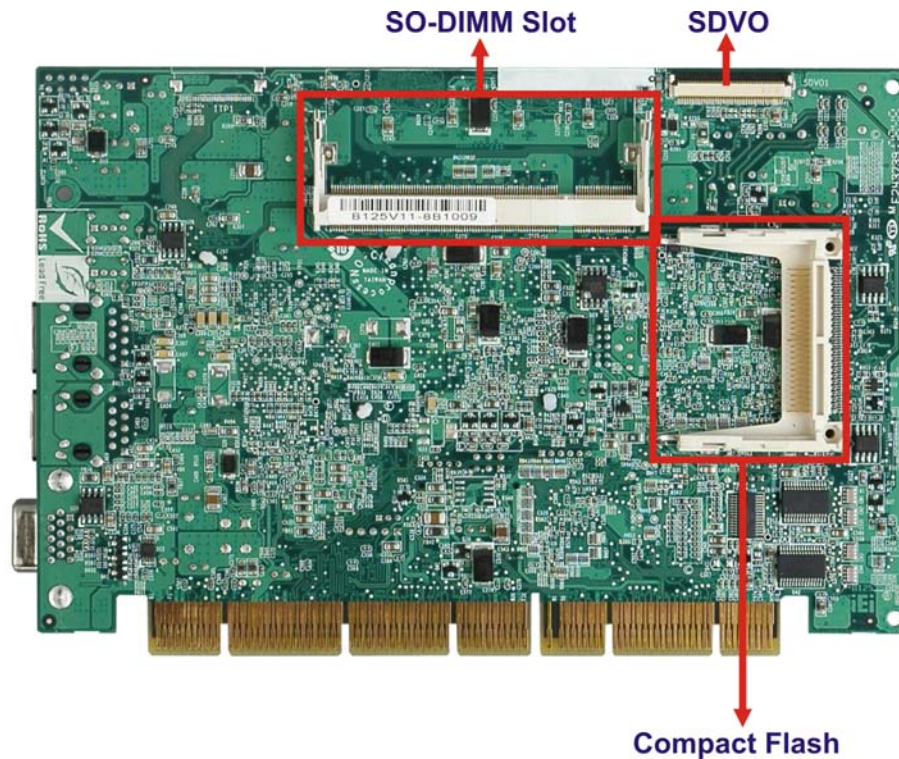
Figure 1-3: PCISA-945GSE Overview (Rear)

1.3 Peripheral Connectors and Jumpers

The PCISA-945GSE has the following connectors on-board:

- 1 x ATX power control connector
- 1 x Audio kit connector
- 1 x Backlight inverter connector
- 1 x Battery connector
- 1 x BIOS programming header
- 1 x CompactFlash® slot
- 1 x Digital I/O connector
- 1 x Edge connector
- 1 x Fan connector
- 1 x Floppy disk connector
- 1 x Front panel connector
- 1 x IDE connector
- 1 x Infrared connector

- 1 x Keyboard / mouse connector

- 1 x LVDS connector

- 1 x Parallel port connector

- 1 x RS-232 connector

- 1 x RS-232/422/485 connector

- 2 x SATA connectors

- 1 x SDVO connector

- 1 x SO-DIMM slot

- 1 x TV connector

- 2 x USB connectors

The PCISA-945GSE has the following external peripheral interface connectors on the board rear panel.

- 2 x Network ports

- 2 x USB ports

- 1 x VGA port

The PCISA-945GSE has the following on-board jumpers:

- ATX power control

- Clear CMOS

- COM2 port mode

- CompactFlash® card setup

- LCD panel type selector

- LCD voltage selector

1.4 Technical Specifications

PCISA-945GSE technical specifications are listed in Table 1-1. See **Chapter 2** for details.

Specification	PCISA-945GSE
Form Factor	PCISA
System CPU	45 nm 1.60 GHz Intel® Atom™ N270
Front Side Bus (FSB)	533 MHz
System Chipset	Northbridge: Intel® 945GSE

	Southbridge: Intel® ICH7M
Memory	512 MB of DDR2 RAM integrated DDR2 SO-DIMM slot
CompactFlash®	One CompactFlash® socket
Super I/O	iTE IT8718F
Display	VGA LVDS HDTV SDVO
BIOS	AMI BIOS label
Audio	Through HD Audio or AC'97 audio kit
LAN	Two Realtek RTL8111CP PCIe GbE controllers
COM	One RS-232 serial port One RS-232/422/485 serial port
USB2.0	Six USB 2.0 devices supported (four internal, two external)
Hard Drives	One 40-pin IDE connector
SATA	Two 1.5 Gb/s SATA drives supported
Keyboard/mouse	Internal PS/2 keyboard/mouse connector
Digital I/O	One 8-bit digital I/O connector
Watchdog Timer	Software programmable 1-255 sec.
Infrared	One infrared connector supports Serial Infrared (SIR) Amplitude Shift Keyed IR (ASKIR)
Power Supply	ATX and AT power supported
Power Consumption	5 V @ 2.79 A 12 V @ 0.20 A (with 512 MB built-in DDR2 memory)
Temperature	0ºC – 60ºC (32ºF - 140ºF)
Humidity (operating)	5%~95% non-condensing

Dimensions (LxH)	185 mm x 127.6 mm
Weight (GW/NW)	1000 g / 252 g

<div align="center">

Table 1-1: Technical Specifications

</div>

1.5 Dimensions

1.5.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**: 185 mm
- **Height**: 127.6 mm

<div align="center">
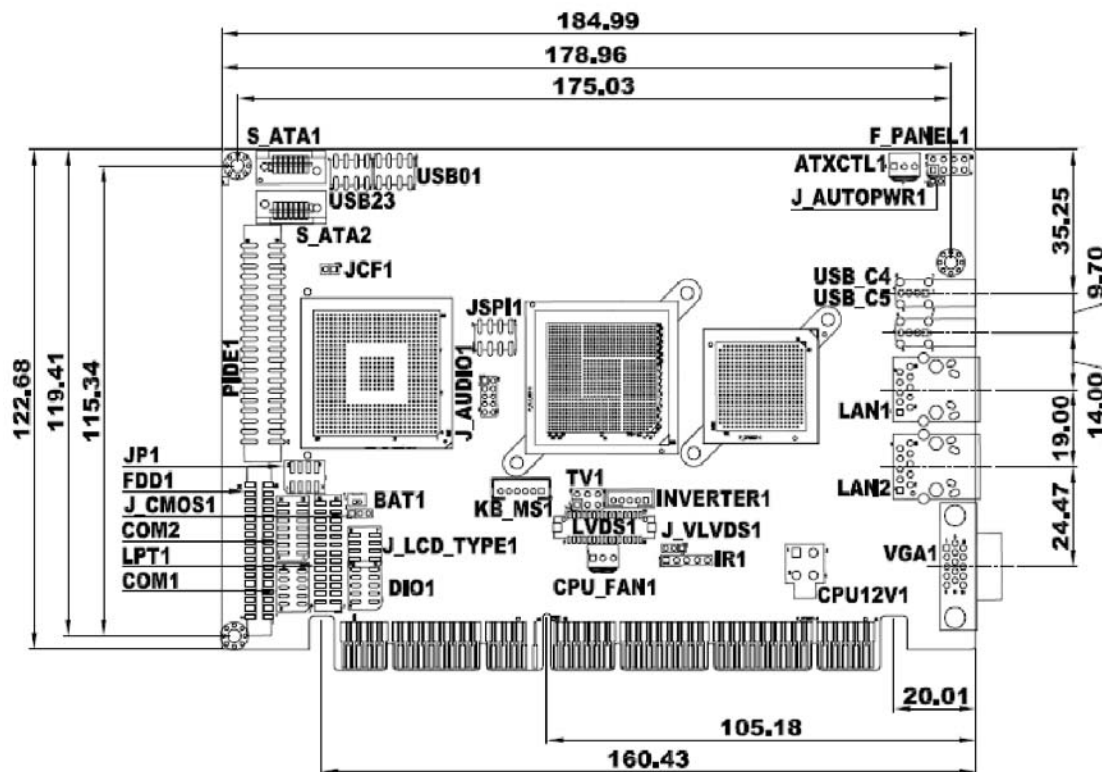
Figure 1-4: PCISA-945GSE Dimensions (mm)

</div>

1.5.2 External Interface Panel Dimensions

External peripheral interface connector panel dimensions are shown in Figure 1-5.
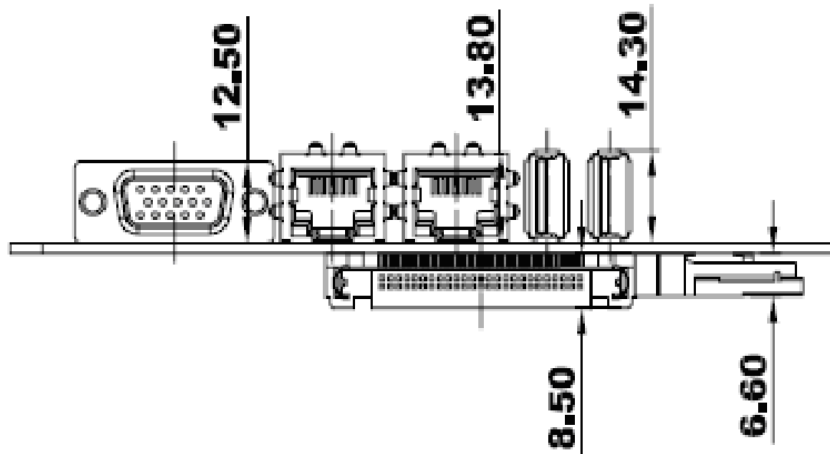
Figure 1-5: External Interface Panel Dimensions (mm)

1.6 Data Flow

Figure 1-6 shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.
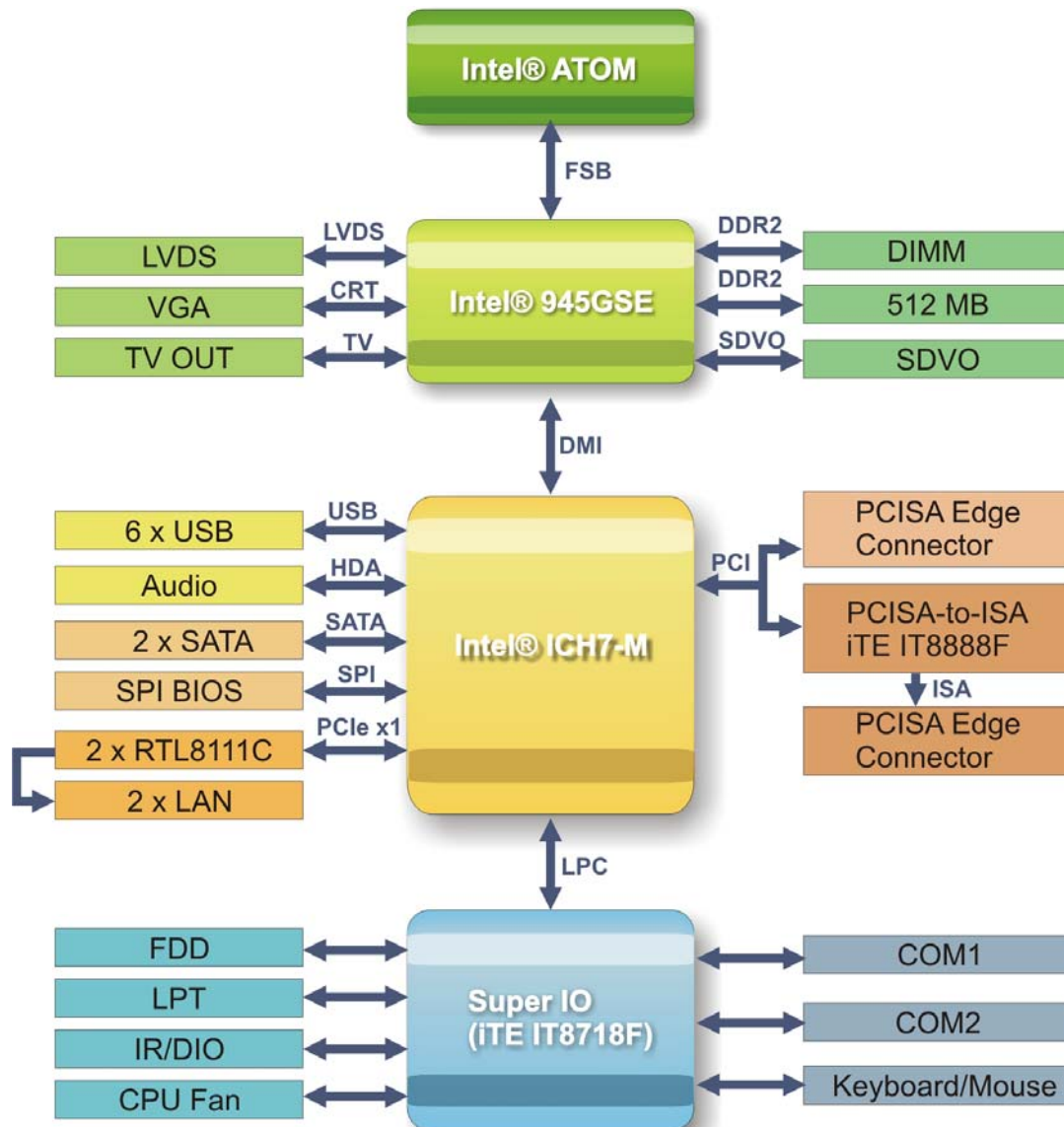
Figure 1-6: Data Flow Block Diagram

Chapter

2

Unpacking

2.1 Anti-static Precautions

> ⚠ **WARNING!**
>
> Failure to take ESD precautions during the installation of the PCISA-945GSE may result in permanent damage to the PCISA-945GSE and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PCISA-945GSE. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PCISA-945GSE, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- *Self-grounding*:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring the PCISA-945GSE, place it on an anti-static pad. This reduces the possibility of ESD damaging the PCISA-945GSE.
- *Only handle the edges of the PCB*:- When handling the PCB, hold the PCB by the edges.

2.2 Unpacking

2.2.1 Unpacking Precautions

When the PCISA-945GSE is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 762.1**.
- Make sure the packing box is facing upwards so the PCISA-945GSE does not fall out of the box.
- Make sure all the components shown in **Section 762.3** are present.

2.3 Unpacking Checklist

NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the PCISA-945GSE was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

2.3.1 Package Contents

The PCISA-945GSE is shipped with the following components:

Quantity	Item and Part Number	Image
1	PCISA-945GSE	
2	SATA cable (P/N: 32801-000703-400-RS)	
1	LPT and RS-232 cable (P/N: 19800-003500-100-RS)	
1	USB cable (P/N: 19800-003100-300-RS)	
1	Mini jumper pack (2.0 mm) (P/N:33100-000033-RS)	
1	Utility CD	

Quantity	Item and Part Number	Image
1	Quick Installation Guide	

Table 2-1: Packing List

2.3.2 Optional Items

The PCISA-945GSE is shipped with the following components:

Item and Part Number	Image
5.1 Channel AC'97 audio kit (P/N: AC-KIT08R-R10)	
7.1 Channel HD Audio kit (P/N: AC-KIT-883HD-R10)	
Dual USB cable (wo bracket) (P/N: 32000-044300-RS)	
Dual RS-232 cable (P/N: 32200-000077-RS)	
TV-out cable (P/N: 19800-000067-RS)	
HDTV output cable (P/N: 32000-083701-RS)	
KB/MS cable (P/N: 19800-000075-RS)	
FDD cable (P/N: 32200-000058-RS)	

Item and Part Number	Image
HDD cable (P/N: 32200-000009-RS)	
IDE-cable (P/N: 32200-008800-RS)	
SATA power cable (P/N: 32100-088600-RS)	

Table 2-2: Power Consumption

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter outlines all internal and external connectors on the PCISA-945GSE.

3.1.1 Layout

Figure 3-1 shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.
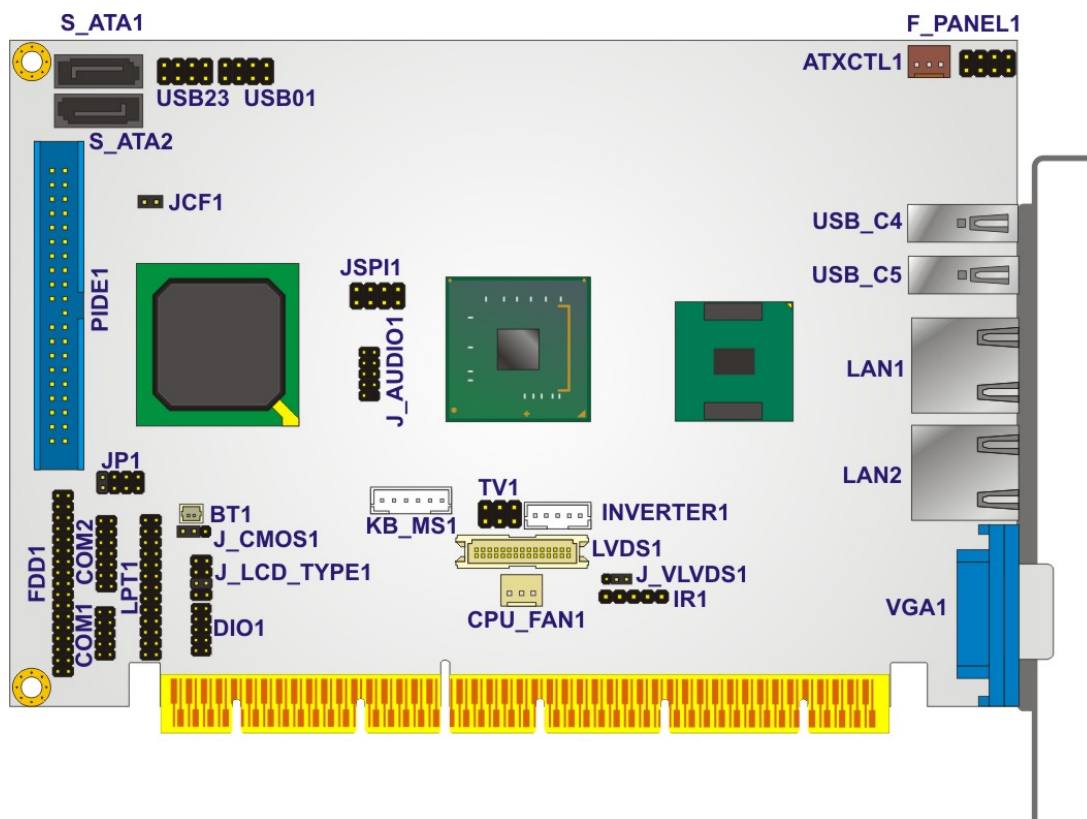
Figure 3-1: Connector and Jumper Locations [Front Side]

Figure 3-2 shows the connectors on the solder side of the PCISA-945GSE.
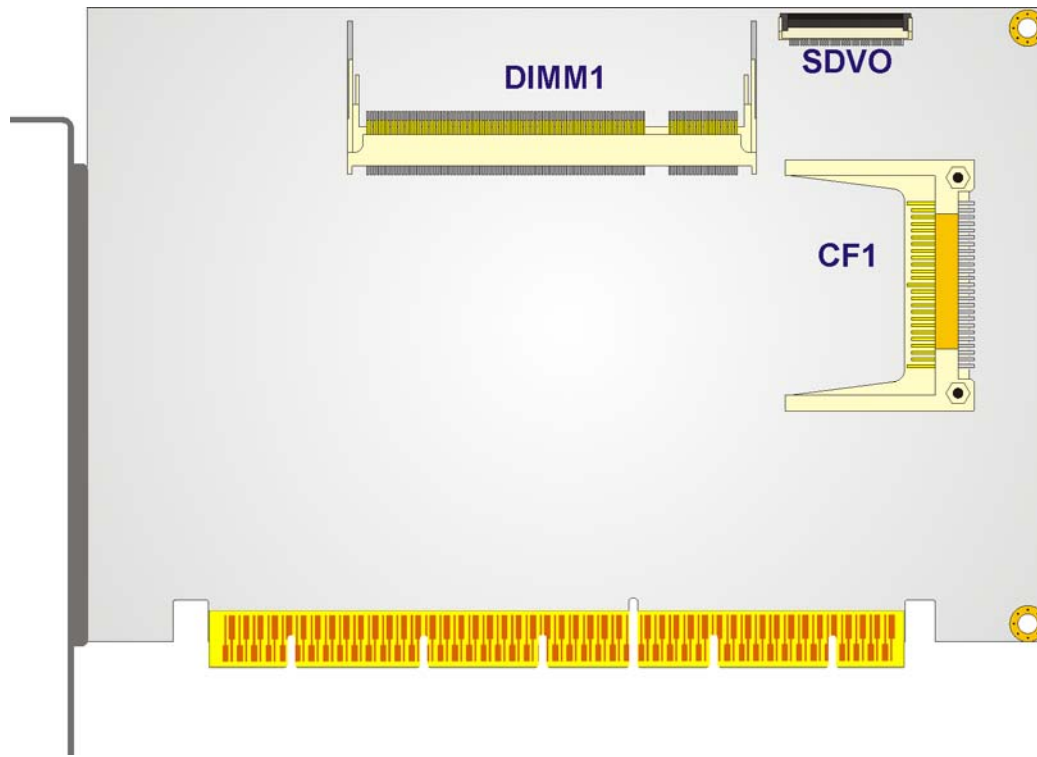
Figure 3-2: Connector and Jumper Locations [Solder Side]

3.1.2 Internal Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the PCISA-945GSE. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
ATX power control connector	3-pin wafer	ATXCTL1
Audio kit connector	9-pin header	J_AUDIO1
Backlight inverter connector	5-pin box header	INVERTER1
Battery connector	2-pin box header	BT1
BIOS programming connector	8-pin header	JSPI1
CompactFlash® slot	CF slot	CF1
DDR2 SO-DIMM slot	SO-DIMM slot	DIMM1

Connector	Type	Label
Digital I/O connector	10-pin header	DIO1
Fan connector	3-pin wafer	CPU_FAN1
Floppy disk connector	34-pin header	FDD1
Front panel connector	8-pin header	F_PANEL1
IDE connector	40-pin IDE connector	PIDE1
Infrared connector	5-pin header	IR1
Keyboard/mouse connector	6-pin box header	KB_MS1
LVDS connector	30-pin crimp	LVDS1
Parallel port connector	26-pin header	LPT1
RS-232 connector	10-pin header	COM1
RS-232/422/485 connector	14-pin header	COM2
SATA connector	SATA port	SATA1, SATA2
SDVO connector	Flat cable connector	SDVO1
TV connector	6-pin header	TV1
USB connectors	8-pin header	USB01, USB23

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

Table 3-2 lists the rear panel connectors on the PCISA-945GSE. Detailed descriptions of these connectors can be found in **Section 1H3.3** on **page 41**.

Connector	Type	Label
Network ports	RJ-45	LAN1, LAN2
USB ports	USB port	USB_C4, USB_C5
VGA port	VGA port	VGA1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the PCISA-945GSE.

3.2.1 ATX Power Control Connector

CN Label:	**ATXCTL1**
CN Type:	3-pin wafer (1x3)
CN Location:	See Figure 3-3
CN Pinouts:	See Table 3-3

The ATX power supply enable connector enables the PCISA-945GSE to be connected to an ATX power supply. In default mode, the PCISA-945GSE can only us an AT power supply. To enable an ATX power supply the AT Power Select jumper must also be configured. Please refer to Chapter 3 for more details.
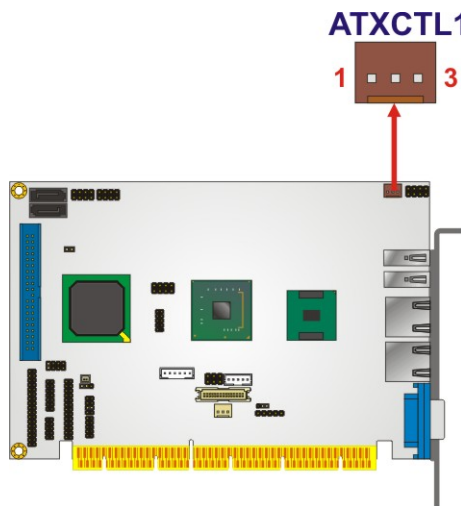
Figure 3-3: ATX Power Supply Enable Connector Location

PIN NO.	DESCRIPTION
1	GND
2	PS-ON

PIN NO.	DESCRIPTION
3	+5 V Standby

Table 3-3: ATX Power Supply Enable Connector Pinouts

3.2.2 Audio Connector

CN Label:	**J_AUDIO1**
CN Type:	9-pin header (2x5)
CN Location:	See Figure 3-4
CN Pinouts:	See Table 3-4

The 9-pin audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.
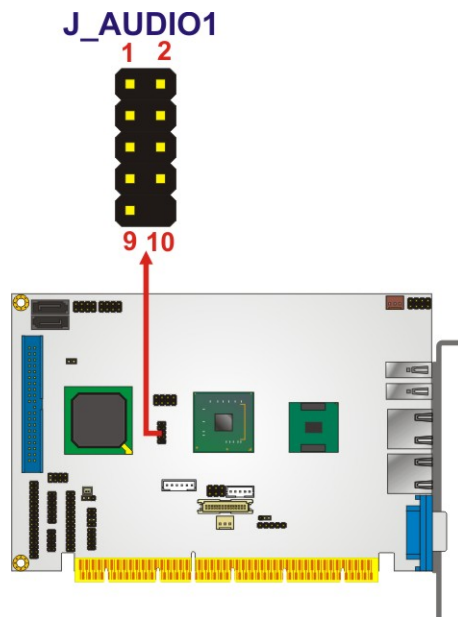
Figure 3-4: Audio Connector Location (9-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SYNC	2	BITCLK
3	SDOUT	4	PCBEEP
5	SDIN	6	RST#
7	VCC	8	GND

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
9	+12 V		

Table 3-4: Audio Connector Pinouts (9-pin)

3.2.3 Backlight Inverter Connector

CN Label: INVERTER1

CN Type: 5-pin box header (1x5)

CN Location: See Figure 3-5

CN Pinouts: See Table 3-5

The backlight inverter provides power to the LCD screen backlight.
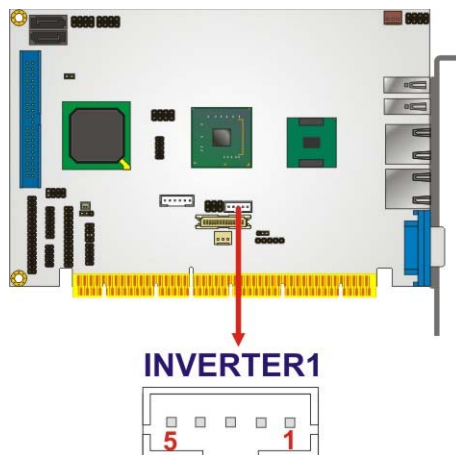
Figure 3-5: LCD Backlight Connector Pinout Locations

PIN NO.	DESCRIPTION
1	Brightness
2	GND
3	12 V
4	GND
5	Backlight enable

Table 3-5: LCD Backlight Connector Pinouts

3.2.4 Battery Connector

CN Label:	**BT1**
CN Type:	2-pin wafer (1x2)
CN Location:	See Figure 3-6
CN Pinouts:	See Table 3-6

The battery connector is for the system battery. The battery retains the system date and time while the computer is turned off.
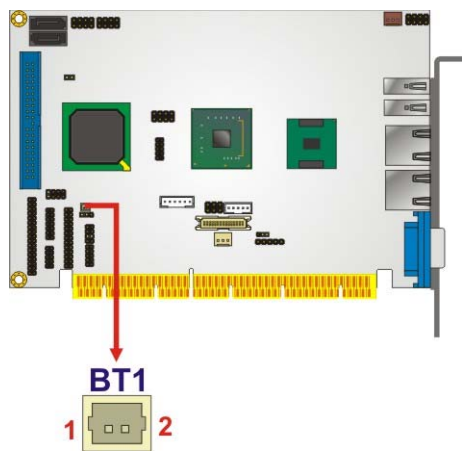
Figure 3-6: Battery Connector Location

PIN NO.	DESCRIPTION
1	Battery+
2	Battery-

Table 3-6: Battery Connector Pinouts

3.2.5 BIOS Programming Connector

CN Label:	**JSPI1**
CN Type:	8-pin header (2x4)
CN Location:	See Figure 3-7
CN Pinouts:	See Table 3-7

The 8-pin SPI Flash connector is used for the BIOS.
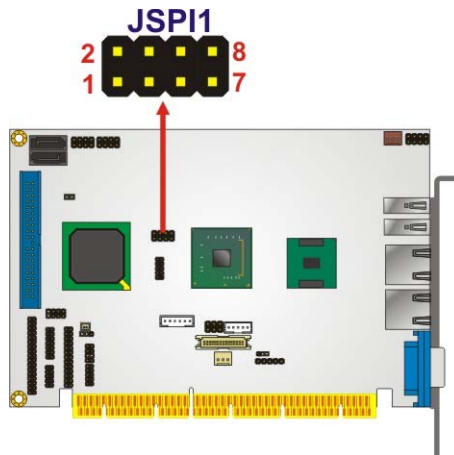
Figure 3-7: BIOS Programming Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	3.3 V	2	GND
3	CS#	4	CLOCK
5	SO	6	SI
7	N/C	8	N/C

Table 3-7: BIOS Programming Connector

3.2.6 CompactFlash® Socket

CN Label: **CF1**

CN Type: CompactFlash® slot

CN Location: See Figure 3-8

CN Pinouts: See Table 3-8

The CompactFlash® card slot allows a CompactFlash® type I or II card to be installed.
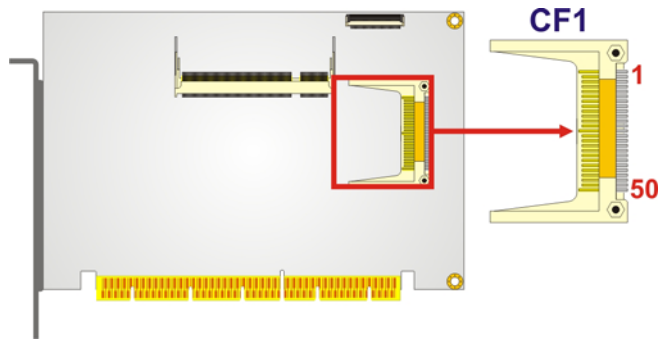
Figure 3-8: CF Card Socket Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CD1#
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	CE#	32	CE2#
8	A10	33	VS1#
9	OE#	34	IOR#
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	IRQ
13	VCC1	38	VCC2
14	A6	39	CSEL#
15	A5	40	VS2#
16	A4	41	RESET#
17	A3	42	WAIT#
18	A2	43	INPACK#
19	A1	44	REG#
20	A0	45	BVD2
21	DATA 0	46	BVD1
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	IOCS16#	49	DATA 10

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
25	CD2#	50	GND2

Table 3-8: CF Card Socket Pinouts

3.2.7 Digital I/O Connector

CN Label: DIO1

CN Type: 10-pin header (2x5)

CN Location: See Figure 3-9

CN Pinouts: See Table 3-9

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable.
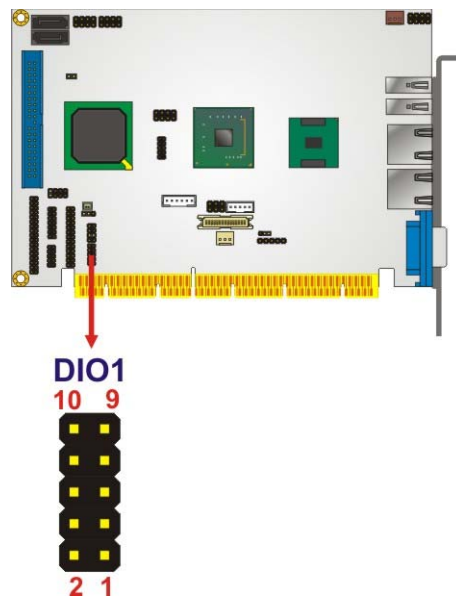
Figure 3-9: Digital I/O Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
9	Input 1	10	Input 0

Table 3-9: DIO Connector Pinouts

3.2.8 Fan Connector

CN Label: **CPU_FAN1**

CN Type: 3-pin wafer (1x3)

CN Location: See Figure 3-10

CN Pinouts: See Table 3-10

The fan connector connects to a CPU cooling fan.
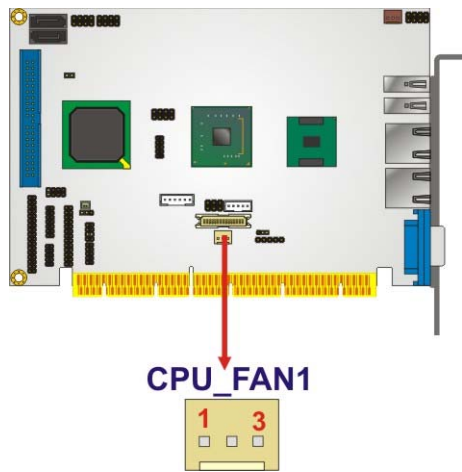
Figure 3-10: CPU Fan Connector Location

PIN NO.	DESCRIPTION
1	Ground
2	+12 V
3	Sense

Table 3-10: CPU Fan Connector Pinouts

3.2.9 Floppy Disk Connector

CN Label: **FDD1**

CN Type: 34-pin header (2x17)

CN Location: See Figure 3-11

CN Pinouts: See Table 3-11

The floppy disk connector is connected to a floppy disk drive.
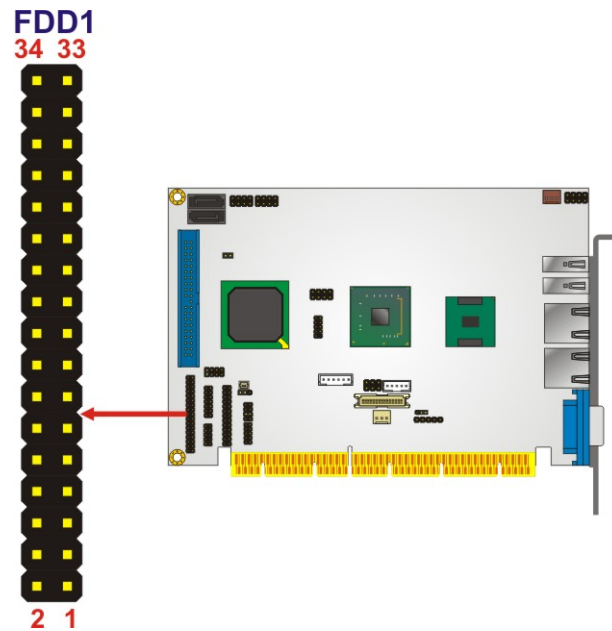
Figure 3-11: Floppy Disk Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	REDUCE WRITE
3	GND	4	N/C
5	N/C	6	N/C
7	GND	8	INDEX#
9	GND	10	MOTOR ENABLE A#
11	GND	12	DRIVE SELECT B#
13	GND	14	DRIVE SELECT A#
15	GND	16	MOTOR ENABLE B#
17	GND	18	DIRECTION#
19	GND	20	STEP#
21	GND	22	WRITE DATA#
23	GND	24	WRITE GATE#
25	GND	26	TRACK 0#

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
27	GND	28	WRITE PROTECT#
29	GND	30	READ DATA#
31	GND	32	SIDE 1 SELECT#
33	GND	34	DISK CHANGE#

Table 3-11: Floppy Disk Connector Pinouts

3.2.10 Front Panel Connector

CN Label: F_PANEL1

CN Type: 8-pin header (2x4)

CN Location: See Figure 3-12

CN Pinouts: See Table 3-12

The front panel connector connects to external switches and indicators to monitor and controls the motherboard. These indicators and switches include:

- Power button
- Reset
- Power LED
- HDD LED
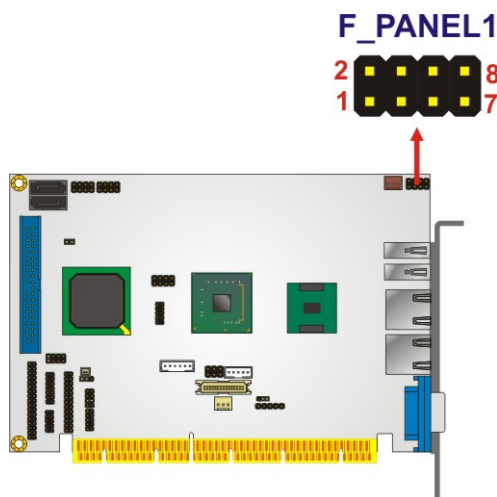
Figure 3-12: Front Panel Connector Pinout Locations

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power button	1	PWR_BTN+	Power LED	2	PWR_LED+
	3	PWR_BTN-		4	PWR_LED-
HDD LED	5	HDD_LED+	Reset button	6	RESET+
	7	HDD_LED-		8	RESET-

Table 3-12: Front Panel Connector Pinouts

3.2.11 IDE Connector

CN Label: **IDE1**

CN Type: 40-pin header (2x20)

CN Location: See Figure 3-13

CN Pinouts: See Table 3-13

The IDE connector can connect to up to two IDE devices like hard drives or optical drives.
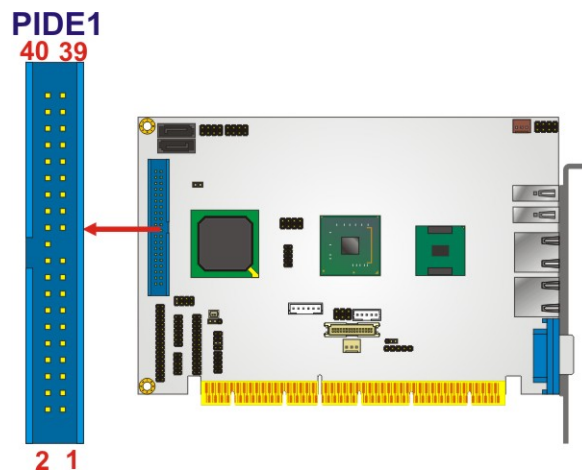
Figure 3-13: IDE Device Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	BALE-DEFAULT
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	PDIAG#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

Table 3-13: IDE Connector Pinouts

3.2.12 Infrared Interface Connector

CN Label: IR1

CN Type: 5-pin header (1x5)

CN Location: See Figure 3-14

CN Pinouts: See Table 3-14

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.
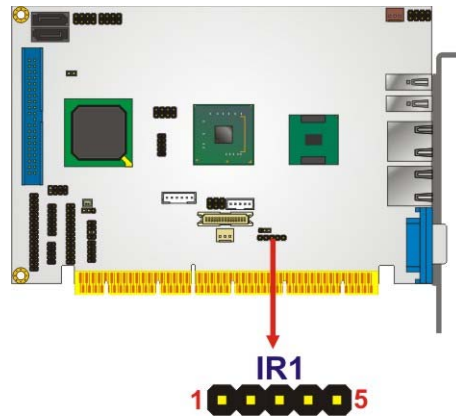
Figure 3-14: Infrared Connector Pinout Locations

PIN NO.	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX

Table 3-14: Infrared Connector Pinouts

3.2.13 Keyboard/Mouse Connector

CN Label:	**KB_MS1**
CN Type:	6-pin box header (1x6)
CN Location:	See Figure 3-15
CN Pinouts:	See Table 3-15

The keyboard and mouse connector can be connected to a standard PS/2 cable or PS/2 Y-cable to add keyboard and mouse functionality to the system.
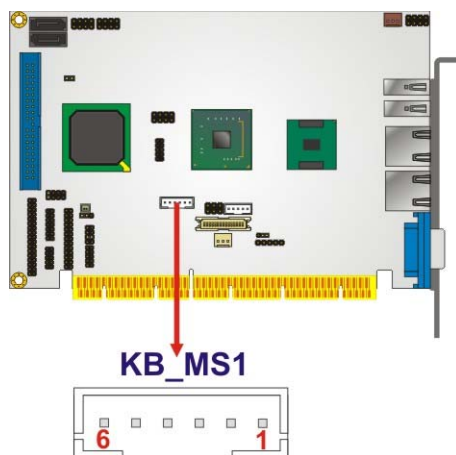
Figure 3-15: Keyboard/Mouse Connector Location

PIN NO.	DESCRIPTION
1	+5 V
2	Mouse data
3	Mouse clock
4	Keyboard data
5	Keyboard clock
6	Ground

Table 3-15: Keyboard/Mouse Connector Pinouts

3.2.14 LVDS LCD Connector

CN Label:	**LVDS1**
CN Type:	30-pin crimp (2x15)
CN Location:	See Figure 3-16
CN Pinouts:	See Table 3-16

The 30-pin LVDS LCD connector can be connected to single channel or dual channel, 18-bit or 36-bit LVDS panel.
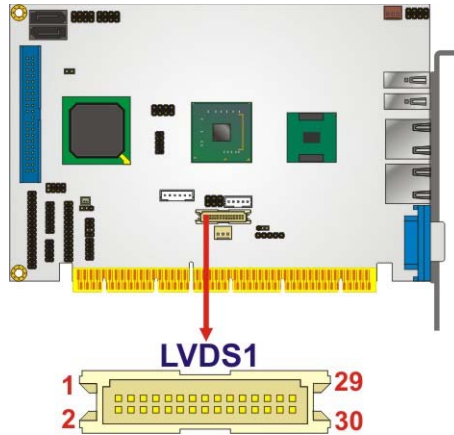
Figure 3-16: LVDS LCD Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	GROUND
3	LVDS_A_TX0-P	4	LVDS_A_TX0-N
5	LVDS_A_TX1-P	6	LVDS_A_TX1-N
7	LVDS_A_TX2-P	8	LVDS_A_TX2-N
9	LVDS_A_TXCLK-P	10	LVDS_A_TXCLK-N
11	LVDS_A_TX3-P	12	LVDS_A_TX3-N
13	GROUND	14	GROUND
15	LVDS_B_TX0-P	16	LVDS_B_TX0-N
17	LVDS_B_TX1-P	18	LVDS_B_TX1-N
19	LVDS_B_TX2-P	20	LVDS_B_TX2-N
21	LVDS_B_TXCLK-P	22	LVDS_B_TXCLK-N
23	LVDS_B_TX3-P	24	LVDS_B_TX3-N
25	GROUND	26	GROUND
27	+LCD VCC	28	+LCD VCC
29	+LCD VCC	30	+LCD VCC

Table 3-16: LVDS LCD Port Connector Pinouts

3.2.15 SATA Drive Connectors

CN Label: SATA1, SATA2

CN Type: 7-pin SATA drive connectors

CN Location: See Figure 3-17

CN Pinouts: See Table 3-17

The SATA connectors connect to SATA hard drives and optical drives.
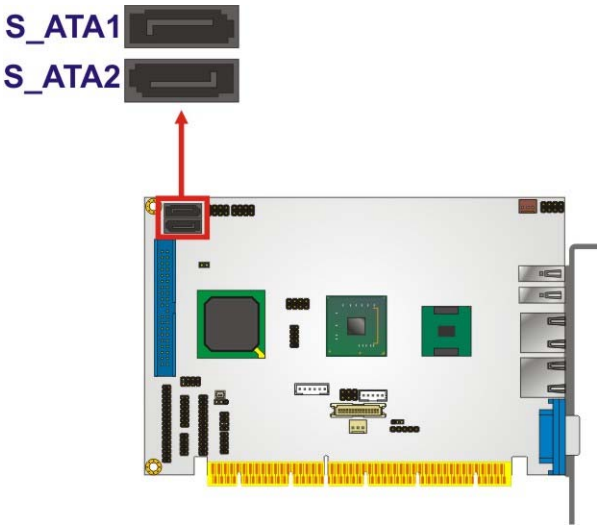
Figure 3-17: SATA Drive Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 3-17: SATA Drive Connector Pinouts

3.2.16 Parallel Port Connector

CN Label: LPT1

CN Type: 26-pin header (2x13)

CN Location: See Figure 3-18

CN Pinouts: See Table 3-18

The 26-pin parallel port connector connects to a parallel port connector interface or some other parallel port device such as a printer.
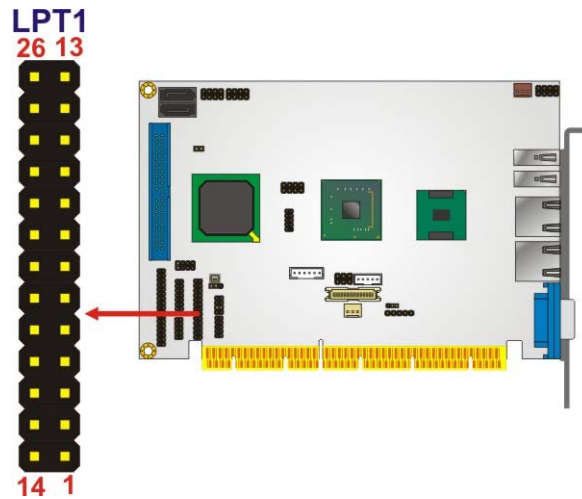
Figure 3-18: Parallel Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

Table 3-18: Parallel Port Connector Pinouts

3.2.17 Serial Port Connector (RS-232)

CN Label: **COM1**

CN Type: 10-pin header (2x5)

CN Location: See Figure 3-19

CN Pinouts: See Table 3-19

The 10-pin serial port connector provides an RS-232 serial communications channel.
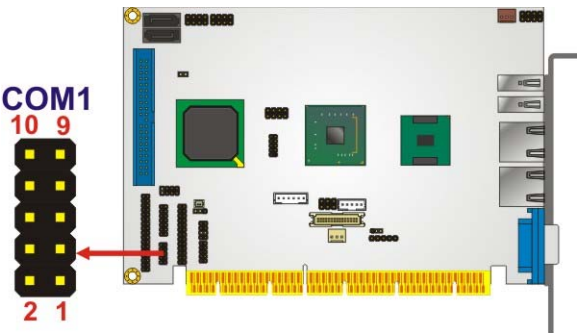
Figure 3-19: RS-232 Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Data Carrier Direct (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Transmit Data (TXD)	6	Clear To Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	N/C

Table 3-19: RS-232 Connector Pinouts

3.2.18 Serial Port Connector (RS-232/422/485)

CN Label: **COM2**

CN Type: 14-pin header (2x7)

CN Location: See Figure 3-20

CN Pinouts: See Table 3-20

The serial port connector provides an RS-232, RS-422 or RS-485 communications channel.
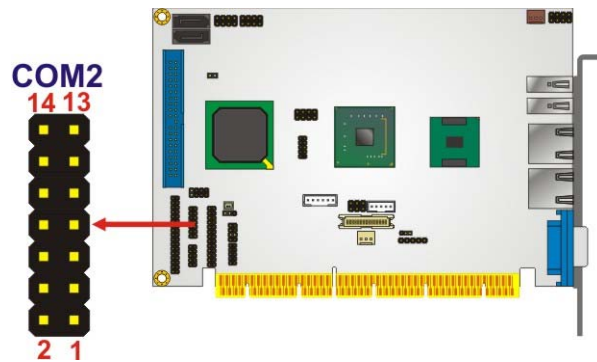
Figure 3-20: RS-232/422/485 Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Data Carrier Direct (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Transmit Data (TXD)	6	Clear To Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	Ground (GND)
11	TXD485+	12	TXD485-
13	RXD485+	14	RXD485-

Table 3-20: RS-232/422/485 Connector Pinouts

3.2.19 SDVO Connector

CN Label:	**SDVO1**
CN Type:	FPC connector
CN Location:	See Figure 3-21
CN Pinouts:	See Table 3-21

The SDVO connector connects to an SDVO video card available from IEI. The SDVO connector interfaces directly to the SDVO port on the Northbridge.
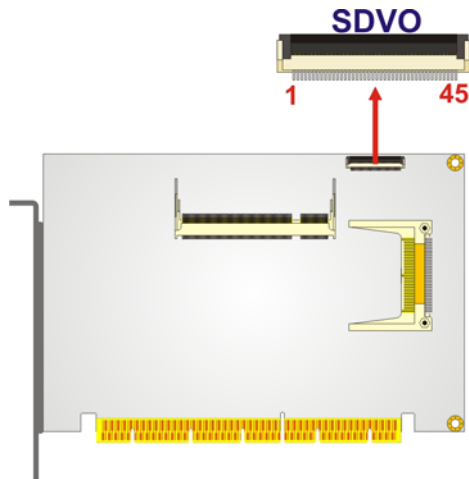
Figure 3-21: SDVO Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	NC
3	NC	4	GND
5	NC	6	NC
7	GND	8	SDVOB_CLK-
9	SDVOB_CLK+	10	GND
11	SDVOB_GREEN-	12	SDVOB_GREEN+
13	GND	14	NC
15	NC	16	GND
17	SDVOB_INT+	18	SDVOB_INT+
19	GND	20	NC
21	NC	22	GND
23	NC	24	NC
25	GND	26	SDVOB_BLUE-
27	SDVOB_BLUE+	28	GND
29	SDVOB_RED-	30	SDVOB_RED+
31	GND	32	SDVO1_STALL-
33	SDVO1_STALL+	34	GND
35	SDVO_TVCLKIN-	36	SDVO_TCCLKIN+
37	GND	38	SDVO_CLK
39	SDVO_DATA	40	PCIRST
41	+5 VS	42	+5 VS

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
43	+5 VS	44	N/C
45	N/C	46	GND
47	GND		

Table 3-21: SDVO Connector Pinouts

3.2.20 TV Out Connector

CN Label:	TV1	
CN Type:	6-pin header (2x3)	
CN Location:	See Figure 3-22	
CN Pinouts:	See Table 3-22	

The TV out connector connects to a TV output by using an S-Video or RCA connector. The TV out connector makes displaying media data on a television easier.
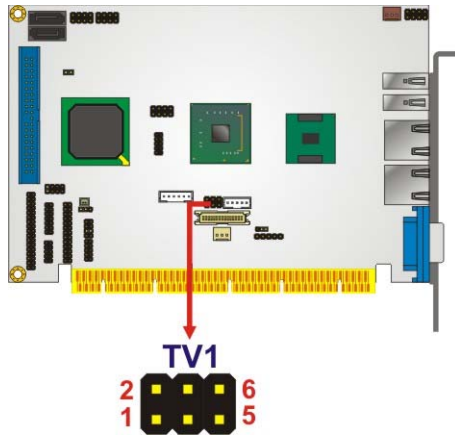
Figure 3-22: TV Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
S-Video Connector			
1	GND	2	AGREEN_Y
3	GND	4	ARED_C
RCA Connector (only video signal)			
5	GND	6	ABLUE_CVBS

Table 3-22: TV Port Connector Pinouts

3.2.21 USB Connectors

CN Label:	**USB01, USB23**
CN Type:	8-pin header (2x4)
CN Location:	See Figure 3-23
CN Pinouts:	See Table 3-23

The 2x4 USB pin connectors provide connectivity to four USB 1.1 or USB 2.0 devices. Each USB connector can support two USB devices. Additional external USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.
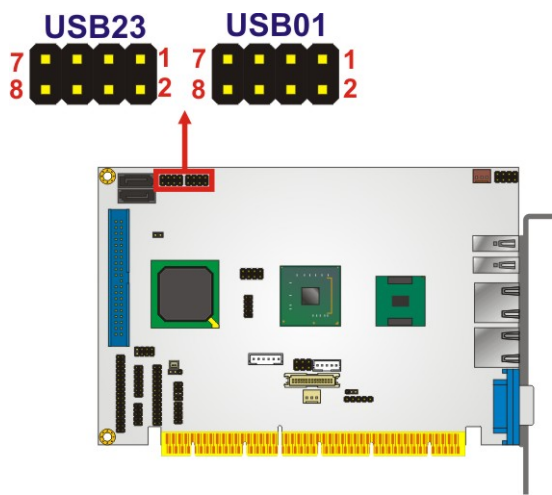
Figure 3-23: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
USB Connector 1		USB Connector 2	
1	VCC	2	GND
3	DATA1-	4	DATA2+
5	DATA1+	6	DATA2-
7	GND	8	VCC

Table 3-23: USB Port Connector Pinouts

3.3 External Peripheral Interface Connector Panel

Figure 3-24 shows the PCISA-945GSE external peripheral interface connector (EPIC) panel. The PCISA-945GSE EPIC panel consists of the following:

- 2 x RJ-45 LAN connectors
- 2 x USB connectors
- 1 x VGA connector
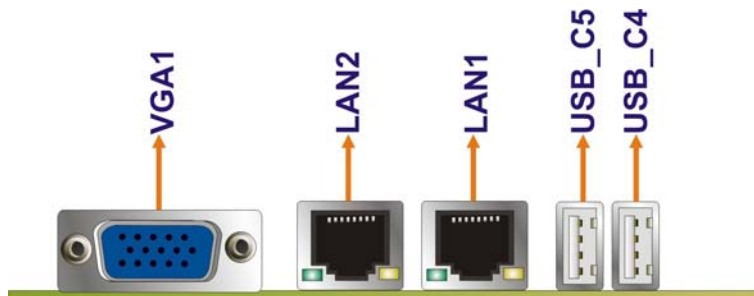
Figure 3-24: PCISA-945GSE External Peripheral Interface Connector

3.3.1 LAN Connectors

CN Label: **LAN1 and LAN2**

CN Type: RJ-45

CN Location: See Figure 3-24

CN Pinouts: See Table 3-24

The PCISA-945GSE is equipped with two built-in RJ-45 Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MDIA3-	5	MDIA2+
2	MDIA3+	6	MDIA1+
3	MDIA1-	7	MDIA0-
4	MDIA2-	8	MDIA0+

Table 3-24: LAN Connector Pinouts
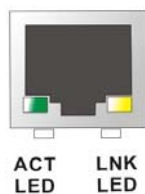
Figure 3-25: LAN Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See Table 3-25.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 3-25: LAN Connector LEDs

3.3.2 USB Connectors

CN Label: **USB_C4 and USB_C5**

CN Type: USB port

CN Location: See Figure 3-24

CN Pinouts: See Table 3-26

The PCISA-945GSE has two external USB 2.0 ports. The ports connect to both USB 2.0 and USB 1.1 devices.

PIN NO.	DESCRIPTION
1	VCC
2	DATA-
3	DATA+
4	GND

Table 3-26: USB Port Pinouts

3.3.3 VGA Connector

CN Label: **VGA1**

CN Type: 15-pin Female

CN Location: See Figure 3-24

CN Pinouts: See Figure 3-26 and Table 3-27

The PCISA-945GSE has a single 15-pin female connector for connectivity to standard display devices.
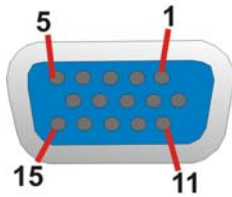
Figure 3-26: VGA Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	CRT_PLUG-
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-27: VGA Connector Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions

> **WARNING:**
>
> Failure to take ESD precautions during the installation of the PCISA-945GSE may result in permanent damage to the PCISA-945GSE and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PCISA-945GSE. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PCISA-945GSE, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband**: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding**:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad**: When configuring the PCISA-945GSE, place it on an anti-static pad. This reduces the possibility of ESD damaging the PCISA-945GSE.
- **Only handle the edges of the PCB**:-: When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the PCISA-945GSE is installed. All installation notices pertaining to the installation of the PCISA-945GSE should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the PCISA-945GSE and injury to the person installing the motherboard.

4.2.1 Installation Notices

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the PCISA-945GSE, PCISA-945GSE components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  o The user manual provides a complete description of the PCISA-945GSE installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  o Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the PCISA-945GSE on an antistatic pad:
  o When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the PCISA-945GSE off:
  o When working with the PCISA-945GSE, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the PCISA-945GSE **DO NOT:**

- ▪ **DO NOT** remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- ▪ **DO NOT** use the product before verifying all the cables and power connectors are properly connected.
- ▪ **DO NOT** allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.2.2 Installation Checklist

The following checklist is provided to ensure the PCISA-945GSE is properly installed.

- ▪ All the items in the packing list are present
- ▪ A compatible memory module is properly inserted into the slot
- ▪ The CF Type I or CF Type II card is properly installed into the CF socket
- ▪ The jumpers have been properly configured
- ▪ The PCISA-945GSE is inserted into a chassis with adequate ventilation
- ▪ The correct power supply is being used
- ▪ The following devices are properly connected
  - o Primary and secondary IDE device
  - o SATA drives
  - o Power supply
  - o USB cable
  - o Serial port cable
- ▪ The following external peripheral devices are properly connected to the chassis:
  - o VGA screen
  - o Keyboard
  - o Mouse
  - o USB devices
  - o LAN cable

4.3 Unpacking

When the PCISA-945GSE is unpacked, please check all the unpacking list items listed in Chapter 3 are indeed present. If any of the unpacking list items are not available please

contact the PCISA-945GSE vendor reseller/vendor where the PCISA-945GSE was purchased or contact an IEI sales representative.

4.4 SO-DIMM Installation

To install an SO-DIMM, please follow the steps below and refer to Figure 4-1.
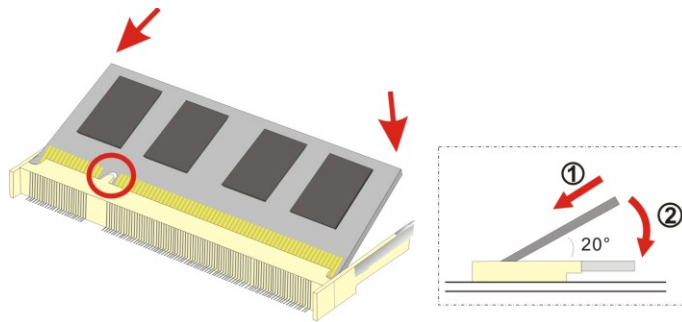
Figure 4-1: SO-DIMM Installation

Step 1: **Locate the SO-DIMM socket**. Place the board on an anti-static mat.

Step 2: **Align the SO-DIMM with the socket**. Align the notch on the memory with the notch on the memory socket.

Step 3: **Insert the SO-DIMM**. Push the memory in at a 20º angle. (See Figure 4-1)

Step 4: **Seat the SO-DIMM**. Gently push downwards and the arms clip into place. (See Figure 4-1)

4.5 CF Card Installation

![NOTE icon] **NOTE:**

The PCISA-945GSE can support both CF Type I cards and CF Type II cards. For the complete specifications of the supported CF cards please refer to Chapter 2.

To install the a CF card (Type 1 or Type 2) onto the PCISA-945GSE, please follow the steps below:

Step 1: **Locate the CF card socket**. Place the PCISA-945GSE on an anti-static pad with the solder side facing up. Locate the CF card.

Step 2: **Align the CF card**. Make sure the CF card is properly aligned with the CF socket.

Step 3: **Insert the CF card**. Gently insert the CF card into the socket making sure the socket pins are properly inserted into the socket. See Figure 4-2.
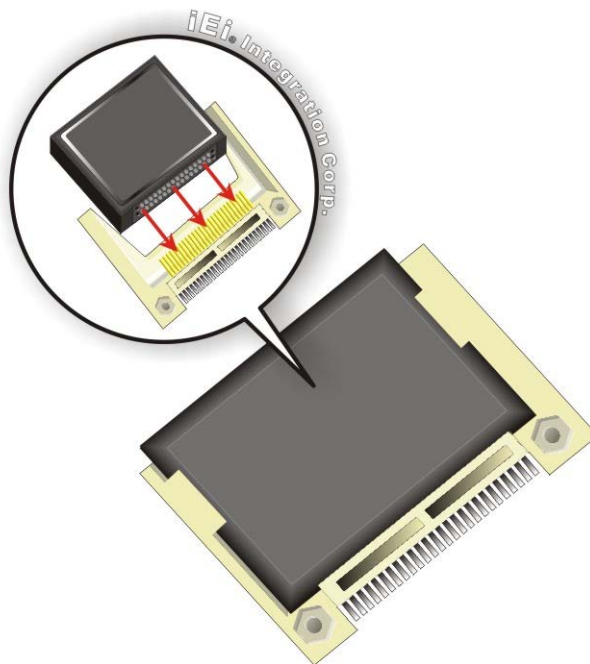
Figure 4-2: CF Card Installation

4.6 ATX Power Control Connector

The ATX power control connector is required when using an ATX power source. To setup the PCISA-945GSE for ATX power, follow the steps below.

Step 1: **Set the ATX jumpers (there are two)** as shown in AT/ATX Power Selection in **Section 4.7.1**.

Step 2: **Connect the ATX control cable**. Connect the ATX control cable to ATXCTL1 on the PCISA-945GSE and to the ATX control connector on the backplane. (Figure 4-3)
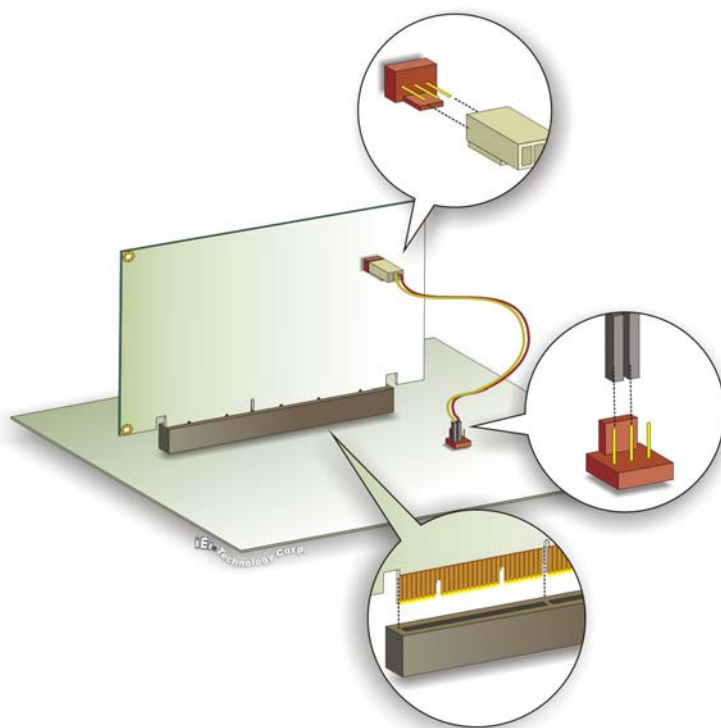
Figure 4-3: ATX Power Control Connector

Step 3: **Turn on with the front panel connector**. The system is turned on using the

Front Panel Connector described in **Section 3.2.10**.

4.7 Jumper Settings

 NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.
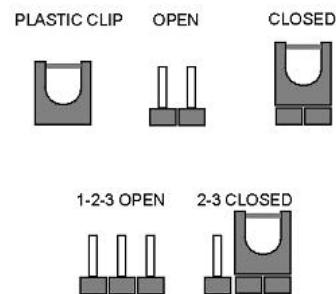
Jumper Locations

Before the PCISA-945GSE is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the PCISA-945GSE are listed in Table 4-1.

Description	Label	Type
AT/ATX power selection	ATXCTL1	3-pin wafer
CF card setup	JCF1	2-pin header
Clear CMOS	J_CMOS	3-pin header
COM 2 function select	JP1	8-pin header
LCD panel resolution selection	J_LCD_TYPE1	8-pin header
LVDS voltage selection	J_VLVDS	3-pin header

Table 4-1: Jumpers
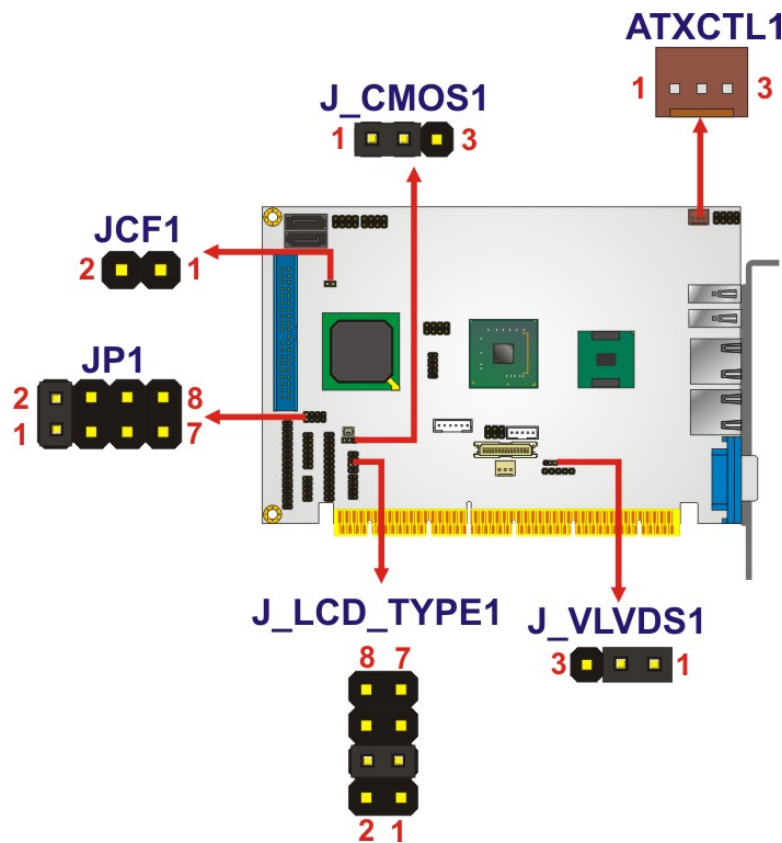
Figure 4-4: Jumper Locations

4.7.1 AT/ATX Power Selection

Jumper Label:	ATXCTL1
Jumper Type:	3-pin wafer
Jumper Settings:	See Table 4-2
Jumper Location:	See Figure 4-4

The AT/ATX power selection jumper sets the system power mode as AT or ATX. Jumper settings are shown below.

Jumper	ATXCTL1
AT	Short 1-2
ATX	Connect to PS_ON# and 5 VSB

Table 4-2: AT/ATX Power Selection Jumper Settings

4.7.2 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-3
Jumper Location:	See Figure 4-4

If the PCISA-945GSE fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the "CMOS Settings Wrong" message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- ▪ Enter the correct CMOS setting
- ▪ Load Optimal Defaults
- ▪ Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in Table 4-3.

AT Power Select	Description
1-2	Keep CMOS Setup
2-3	Clear CMOS Setup

Table 4-3: Clear CMOS Jumper Settings

4.7.3 CF Card Setup

Jumper Label:	**JCF1**
Jumper Type:	2-pin header
Jumper Settings:	See Table 4-4
Jumper Location:	See Figure 4-4

The CF Card Setup jumper sets the CF Type I card or CF Type II cards as either the slave device or the master device. CF Card Setup jumper settings are shown in Table 4-4.

CF Card Setup	Description
Open	Slave
Closed	Master

Table 4-4: CF Card Setup Jumper Settings

4.7.4 COM2 RS-232/422/485 Selection Jumper

Jumper Label:	**JP1**
Jumper Type:	8-pin header
Jumper Settings:	See Table 4-5
Jumper Location:	See Figure 4-4

The RS-232/422/485 Serial Port Select jumper sets the communication protocol used by COM3. The RS-232/422/485 Serial Port Select settings are shown in Table 4-5.

RS-232/422/485	Description
1-2	RS-232
3-4	RS-422
5-6	RS-485
7-8	RS-485 with RTS Control

Table 4-5: COM2 RS-232/422/485 Selection Jumper Pinouts

4.7.5 LCD Panel Type Selection

Jumper Label:	**J_LCD_TYPE1**
Jumper Type:	6-pin header
Jumper Settings:	See Table 4-6
Jumper Location:	See Figure 4-4

The **LCD Panel Type Selection** jumper allows the LVDS screen voltage to be set. The **LCD Panel Type Selection** jumper settings are shown in Table 4-7.

LCD Panel Selection	Description
Open	640 x 480 (18-bit)
1-2	800 x 480 (18-bit)
3-4	800 x 600 (18-bit)
1-2 and 3-4	1024 x 768 (18-bit)
5-6	1280 x 1024 (36-bit)
1-2 and 5-6	1400 x 1050 (36-bit)
3-5 and 5-6	1400 x 900 (36-bit)
1-2, 3-4 and 5-6	1600 x 1200 (36-bit)

Table 4-6: LCD Panel Type Selection Jumper Settings

4.7.6 LVDS Voltage Selection

WARNING:

Permanent damage to the screen and PCISA-945GSE may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

Jumper Label:	**J_VLVDS1**
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-7
Jumper Location:	See Figure 4-4

The **LVDS Voltage Selection** jumper allows the LVDS screen voltage to be set. The **LVDS Voltage Selection** jumper settings are shown in Table 4-7.

LCD Voltage Select	Description
1-2	3.3 V
2-3	5 V

Table 4-7: LVDS Voltage Selection Jumper Settings

4.8 Chassis Installation

4.8.1 Airflow

WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the PCISA-945GSE must have air vents to allow cool air to move into the system and hot air to move out.

The PCISA-945GSE must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

![NOTE icon] **NOTE:**

> IEI has a wide range of backplanes available. Please contact your PCISA-945GSE vendor, reseller or an IEI sales representative at sales@ieiworld.com or visit the IEI website (http://www.ieiworld.com) to find out more about the available chassis.

4.8.2 Motherboard Installation

To install the PCISA-945GSE motherboard into the chassis please refer to the reference material that came with the chassis.

4.9 Internal Peripheral Device Connections

The cables listed in Table 4-8 are shipped with the PCISA-945GSE.

Quantity	Type
1	Parallel port and serial port cable
2	SATA cables
1	USB cable

Table 4-8: IEI Provided Cables

4.9.1 SATA Drive Connection

The PCISA-945GSE is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

Step 1:   Locate the connectors. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Insert the cable connector into the on-board SATA

drive connector until it clips into place. See Figure 4-5.
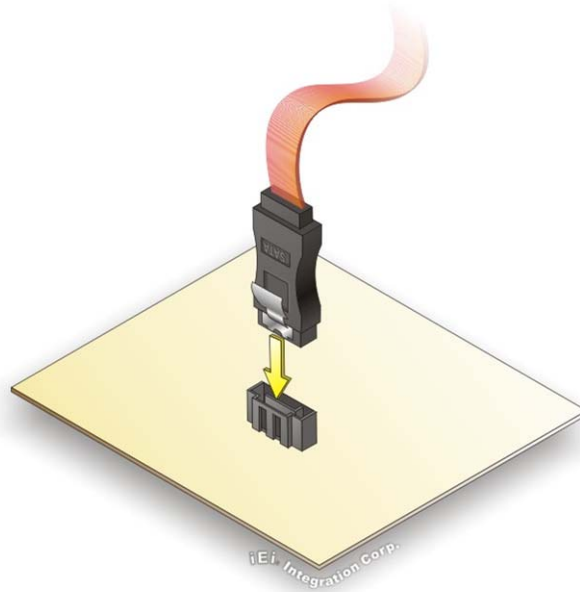
Figure 4-5: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end

of the cable to the connector at the back of the SATA drive. See Figure 4-6.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the

back of the SATA drive. See Figure 4-6.
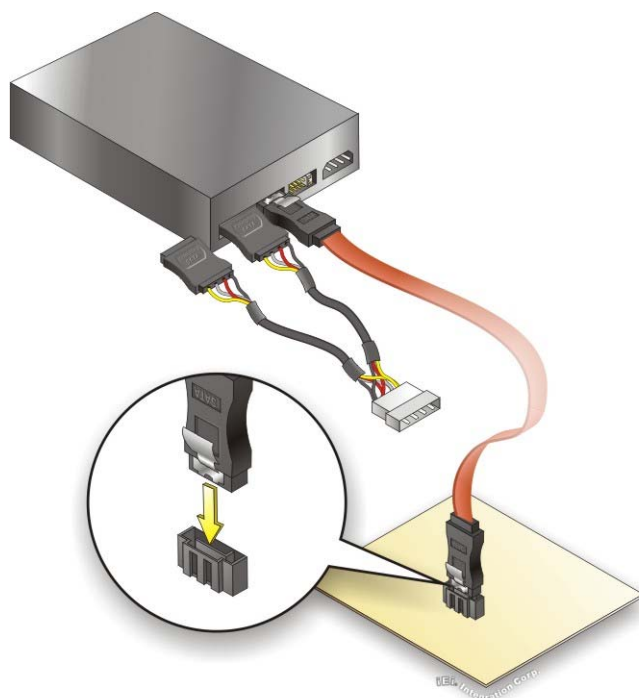
Figure 4-6: SATA Power Drive Connection

4.9.2 USB Cable (Dual Port) with Slot Bracket

The PCISA-945GSE is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the USB connectors are shown in **Chapter 3**.

⚠️ **WARNING:**

If the USB pins are not properly aligned, the USB device can burn out.

Step 2: **Align the connectors**. The cable has two connectors. Correctly align pin 1on each cable connector with pin 1 on the PCISA-945GSE USB connector.

Step 3: **Insert the cable connectors.** Once the cable connectors are properly aligned

with the USB connectors on the PCISA-945GSE, connect the cable connectors

to the on-board connectors. See Figure 4-7.
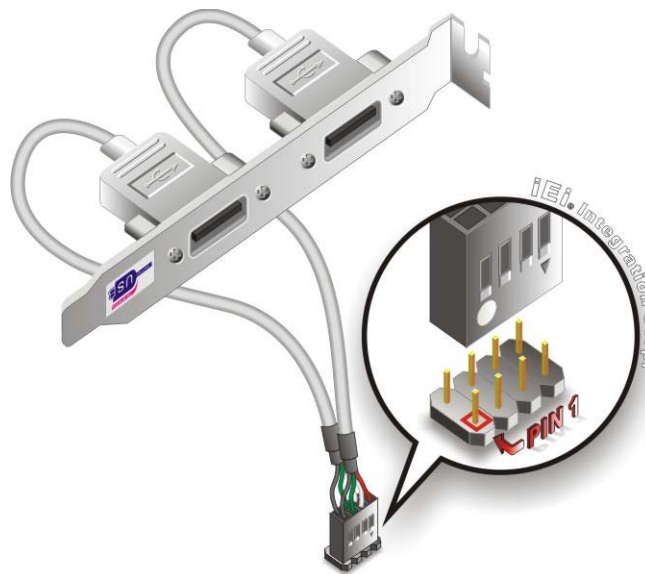
Figure 4-7: Dual USB Cable Connection

Step 4: **Attach the bracket to the chassis**. The USB 2.0 connectors are attached to a

bracket. To secure the bracket to the chassis please refer to the installation

instructions that came with the chassis.

Chapter

5

BIOS Setup

5.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration.   This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the DELETE key as soon as the system is turned on or
2. Press the DELETE key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the DELETE key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press ENTER to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press ESC to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes

Key	Function
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 5**.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Power** Changes power management settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (BIOS Menu 1) appears when the **BIOS Setup** program is entered.
The **Main** menu gives an overview of the basic system information.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

   System Overview                              Use [ENTER], [TAB] or
                                                [SHIFT-TAB] to select
   AMIBIOS                                      a field.
   Version   :08.00.15
   Build Date:10/08/08                          Use [+] or [-] to
   ID        :E125MR10                          configure system
                                                Time.
   Processor
   Intel® Atom (TM) CPU N270 @ 1.60GHz
   Speed     :1600MHz
   Count     :1

   System Memory                                ←→    Select Screen
   Size      :504MB                             ↑↓    Select Item
                                                +-    Change Field
   System Time                [14:20:27]        Tab   Select Field
   System Date                [Tue 05/06/2008]  F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 1: Main

▪   **System Overview**

The **System Overview** lists a brief summary of different system components. The fields in
System Overview cannot be changed. The items shown in the system overview include:

   ▪   **AMI BIOS**: Displays auto-detected BIOS information
      ○   Version: Current BIOS version
      ○   Build Date: Date the current BIOS version was made
      ○   ID: Installed BIOS ID
   ▪   **Processor**: Displays auto-detected CPU specifications
      ○   Type: Names the currently installed processor
      ○   Speed: Lists the processor speed
      ○   Count: The number of CPUs on the motherboard

▪ **System Memory**: Displays the auto-detected system memory.

o Size: Lists memory size

The System Overview field also has two user configurable fields:

▪ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

▪ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

5.3 Advanced

Use the **Advanced** menu (BIOS Menu 2) to configure the CPU and peripheral devices through the following sub-menus:

⚠️ **WARNING:**

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  Advanced Settings                              Configure CPU

  WARNING: Setting wrong values in below sections
           may cause system to malfunction

  ▶ CPU Configuration
  ▶ IDE Configuration
  ▶ Floppy Configuration
  ▶ SuperIO Configuration
  ▶ Hardware Health Configuration
  ▶ Power Configuration
  ▶ Remote Access Configuration                 ←→    Select Screen
  ▶ USB Configuration                           ↑↓    Select Item
                                                Enter Go to SubScreen
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit


      v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
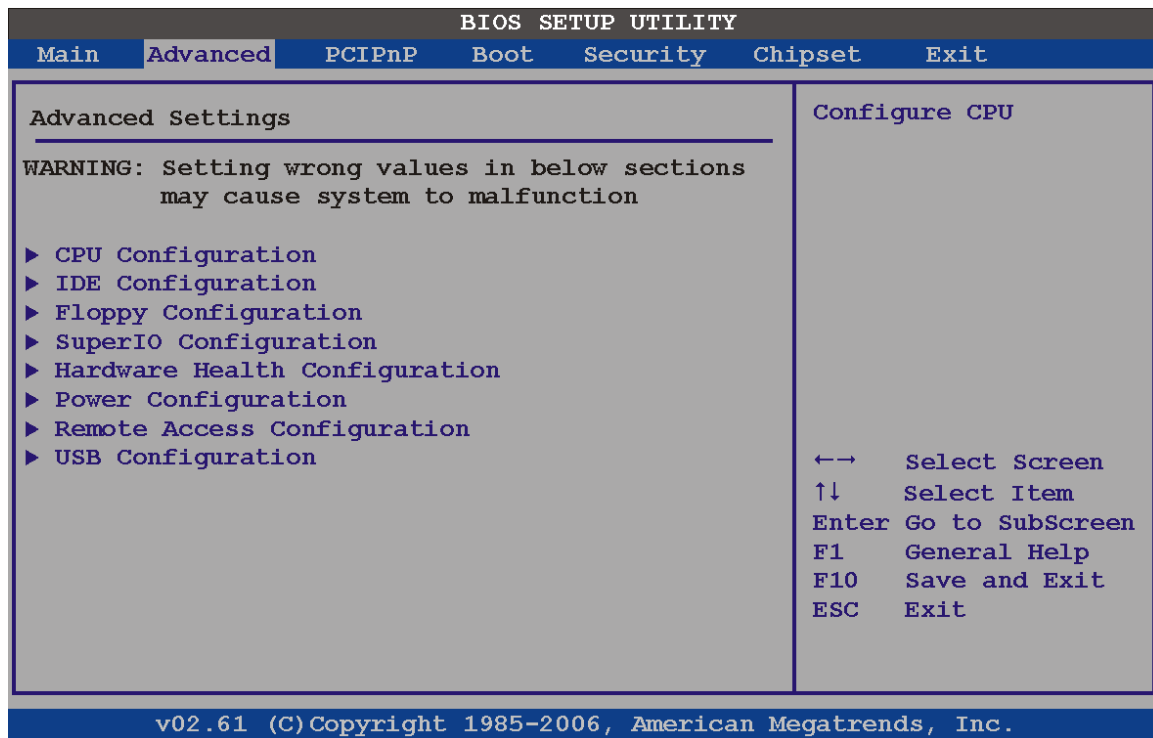
BIOS Menu 2: Advanced

5.3.1 CPU Configuration

Use the **CPU Configuration** menu (BIOS Menu 3) to view detailed CPU specifications and configure the CPU.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

   Configure advanced CPU settings
   Module Version - 3F.10

  Manufacturer:Intel
  Intel® Atom(TM)CPU N270 @ 1.60GHz
  Frequency    :1.60GHz
  FSB Speed    :532MHz

  Cache L1     : 24 KB
  Cache L2     : 512 KB

  Ratio Actual Value: 12

                                            ←→    Select Screen
                                            ↑↓    Select Item
                                            F1    General Help
                                            F10   Save and Exit
                                            ESC   Exit

        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 3: CPU Configuration

The CPU Configuration menu (BIOS Menu 3) lists the following CPU details:

- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size

5.3.2 IDE Configuration

Use the **IDE Configuration** menu (BIOS Menu 4) to change and/or set the configuration of the IDE devices installed in the system.

```
                         BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

 IDE Configuration                                     Options

 ATA/IDE Configuration         [Compatible]            Disabled
    Legacy IDE Channels        [SATA Pri, PATA Sec]    Compatible
                                                       Enhanced
 ▶ Primary IDE Master            : [Not Detected]
 ▶ Primary IDE Slave             : [Not Detected]
 ▶ Secondary IDE Master          : [Not Detected]
 ▶ Secondary IDE Slave           : [Not Detected]




                                                       ←→    Select Screen
                                                       ↑↓    Select Item
                                                       +-    Change Option
                                                       F1    General Help
                                                       F10   Save and Exit
                                                       ESC   Exit


      v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 4: IDE Configuration

▪ **ATA/IDE Configurations [Compatible]**

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

➔ **Disabled**   Disables the on-board ATA/IDE controller.

➔ **Compatible**   Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔ **Enhanced** DEFAULT Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

▪ **Legacy IDE Channels [PATA Pri, SATA Sec]**

➔ **SATA Only** Only the SATA drives are enabled.

➔ **SATA Pri, PATA Sec** DEFAULT The IDE drives are enabled on the Primary IDE channel. The SATA drives are enabled on the Secondary IDE channel.

➔ **PATA Only** The IDE drives are enabled on the primary and secondary IDE channels. SATA drives are disabled.

▪ **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

▪ Primary IDE Master
▪ Primary IDE Slave
▪ Secondary IDE Master
▪ Secondary IDE Slave

The **IDE Configuration** menu (BIOS Menu 4) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 875.3.2.1** appear.

5.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.

```
                      BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  Primary IDE Master                                  Select the type of
                                                      device connected to
  Device     :Not Detected                            the system.

  Type                          [Auto]
  LBA/Large Mode                [Auto]
  Block (Multi-Sector Transfer) [Auto]
  PIO Mode                      [Auto]
  DMA Mode                      [Auto]
  S.M.A.R.T.                    [Auto]
  32Bit Data Transfer           [Enabled]


                                                      ←→   Select Screen
                                                      ↑↓   Select Item
                                                      +-   Change Option
                                                      F1   General Help
                                                      F10  Save and Exit
                                                      ESC  Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 5: IDE Master and IDE Slave Configuration

■ **Auto-Detected Drive Parameters**

The "grayed-out" items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

▪ **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
▪ **Type**: Indicates the type of devices a user can manually select
▪ **Vendor**: Lists the device manufacturer
▪ **Size**: List the storage capacity of the device.
▪ **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.

- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- **32Bit Data Transfer**: Enables 32-bit data transfer.

- **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**   BIOS is prevented from searching for an IDE disk drive on the specified channel.

➔ **Auto**   DEFAULT   The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.

➔ **CD/DVD**   The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.

➔ **ARMD**   This option specifies an ATAPI Removable Media Device. These include, but are not limited to:
ZIP
LS-120

▪ **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled**   BIOS is prevented from using the LBA mode control on the specified channel.

➔ **Auto**   DEFAULT   BIOS auto detects the LBA mode control on the specified channel.

▪ **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled**   BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

➔ **Auto**   DEFAULT   BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

▪ **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto**   DEFAULT   BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.

➔ **0**   PIO mode 0 selected with a maximum transfer rate of 3.3 MB/s

➔ **1**   PIO mode 1 selected with a maximum transfer rate of 5.2 MB/s

➔ **2**   PIO mode 2 selected with a maximum transfer rate of 8.3 MB/s

➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1 MB/s

➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6 MB/s

(This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

▪ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

➔ **Auto** DEFAULT BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.

➔ **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1 MB/s

➔ **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2 MB/s

➔ **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3 MB/s

➔ **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2 MB/s

➔ **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3 MB/s

➔ **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6 MB/s

➔ **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6 MB/s

➔ **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25 MB/s

➔ **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3 MB/s

è **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)

è **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)

è **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)

▪ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

è **Auto** DEFAULT BIOS auto detects HDD SMART support.

è **Disabled** Prevents BIOS from using the HDD SMART feature.

è **Enabled** Allows BIOS to use the HDD SMART feature

▪ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

è **Disabled** Prevents the BIOS from using 32-bit data transfers.

è **Enabled** DEFAULT Allows BIOS to use 32-bit data transfers on supported hard disk drives.

5.3.3 Floppy Configuration

Use the **Floppy Configuration menu** to configure the floppy disk drive connected to the system.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

   Floppy Configuration                          Select the type of
                                                 floppy drive
   Floppy A                    [Disabled]        connected to the
                                                 sytem.







                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 6: IDE Master and IDE Slave Configuration

▪   **Floppy A/B**

Use the **Floppy A/B** option to configure the floppy disk drive. Options are listed below:

- ▪   Disabled
- ▪   360 KB 51/4”
- ▪   1.2 MB 51/4”
- ▪   720 KB 31/2”
- ▪   1.44 MB 31/2’
- ▪   2.88 MB 31/2”

5.3.4 Super IO Configuration

Use the **Super IO Configuration** menu (BIOS Menu 7) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```
                         BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

   Configure ITE8718 Super IO Chipset              Allows BIOS to select
   ─────────────────────────────────              Serial Port1 Base
   Parallel Port Address          [378]           Addresses.
     Parallel Port Mode           [Normal]
     Parallel Port IRQ            [IRQ7]
   Serial Port1 Address           [3F8/IRQ4]
     Serial Port1 Mode            [Normal]
   Serial Port2 Address           [2F8/IRQ3]
     Serial Port2 Mode            [Normal]


                                                   ←→    Select Screen
                                                   ↑↓    Select Item
                                                   +-    Change Option
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit


          v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 7: Super IO Configuration

▪   **Parallel Port Address [Disabled]**

Use the **Parallel Port Address** option to select the parallel port base address.

➔   **Disabled**   DEFAULT   No base address is assigned to the Parallel Port

➔   **378**   Parallel Port I/O port address is 378

➔   **278**   Parallel Port I/O port address is 278

➔   **3BC**   Parallel Port I/O port address is 3BC

▪   **Parallel Port Mode [Normal]**

Use the **Parallel Port Mode** option to select the mode the parallel port operates in.

➔ **Normal**   DEFAULT   The normal parallel port mode is the standard mode for parallel port operation.

➔ **ECP**   Parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits on the status register.

➔ **EPP**   The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.

➔ **ECP+EPP**   The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode

The parallel port is also be compatible with EPP devices described above

▪ **Parallel Port IRQ [IRQ7]**

Use the **Parallel Port IRQ** selection to set the parallel port interrupt address.

➔ **IRQ5**   IRQ5 is assigned as the parallel port interrupt address

➔ **IRQ7**   DEFAULT   IRQ7 is assigned as the parallel port interrupt address

▪ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the I/O and IRQ base addresses.

➔ **Disabled**   No base address is assigned to Serial Port 1

➔ **3F8/IRQ4**   DEFAULT   I/O port address is 3F8 and the interrupt address is IRQ4

➔ **3E8/IRQ4**   I/O port address is 3E8 and the interrupt address is IRQ4

➔ **2E8/IRQ3**   I/O port address is 2E8 and the interrupt address is IRQ3

▪ **Serial Port1 Mode [Normal]**

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode.

  ▪ Normal   Default
  ▪ IrDA
  ▪ ASK IR

▪ **Serial Port2 Address [2F8/IRQ3]**

Use the **Serial Port2 Address** option to select the I/O and IRQ addresses.

➔ **Disabled**   No base address is assigned to Serial Port 2

➔ **2F8/IRQ3** DEFAULT I/O port address is 3F8 and the interrupt address is IRQ3

➔ **3E8/IRQ4**   I/O port address is 3E8 and the interrupt address is IRQ4

➔ **2E8/IRQ3**   I/O port address is 2E8 and the interrupt address is IRQ3

▪ **Serial Port2 Mode [Normal]**

Use the **Serial Port2 Mode** option to select the transmitting and receiving mode.

  ▪ Normal   Default
  ▪ IrDA
  ▪ ASK IR

5.3.5 Hardware Health Configuration

The **Hardware Health Configuration** menu (BIOS Menu 8) shows the operating temperature, fan speeds and system voltages.

```
                         BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

   Hardware Health Event Monitoring

   CPU FAN Mode Setting              [Full On Mode]

   CPU Temperature                :43C/109F
   System Temperature             :33C/91F

   CPU Fan Speed                  :4821 RPM

   CPU Core                       :1.136 V
   +1.05V                         :1.040 V
   +3.30V                         :3.296 V
   +5.00V                         :5.026 V                   ←→    Select Screen
   +12V                           :11.840 V                  ↑↓    Select Item
   +1.5V                          :1.488 V                   F1    General Help
   +1.8V                          :1.792 V                   F10   Save and Exit
   +5VSB                          :5.053 V                   ESC   Exit
   VBAT                           :3.184 V




         v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 8: Hardware Health Configuration

■ **CPU FAN Mode Setting [Full On Mode]**

Use the **CPU FAN Mode Setting** option to configure the second fan.

➔ **Full On Mode**   DEFAULT   Fan is on all the time

➔ **Automatic mode**   Fan is off when the temperature is low enough. Parameters must be set by the user.

➔ **PWM Manual mode**   Pulse width modulation set manually

When the **CPU FAN Mode Setting** option is in the **Automatic Mode**, the following parameters can be set.

▪ CPU Temp. Limit of OFF

▪ CPU Temp. Limit of Start

▪ CPU Fan Start PWM

▪ Slope PWM 1

When the **CPU FAN Mode Setting** option is in the **PWM Manual Mode**, the following parameters can be set.

▪ CPU Fan PWM control

▪ **CPU Temp. Limit of OFF [000]**

⚠ **WARNING:**

Setting this value too high may cause the fan to stop when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of OFF** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of OFF** option to select the CPU temperature at which the cooling fan should automatically turn off. To select a value, select the **CPU Temp. Limit of OFF** option and enter a decimal number between 000 and 127. The temperature range is specified below.

▪ Minimum Value: 0°C
▪ Maximum Value: 127°C

▪ **CPU Temp. Limit of Start [020]**

⚠ **WARNING:**

Setting this value too high may cause the fan to start only when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of Start** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of Start** option to select the CPU temperature at which the cooling fan should automatically turn on. When the fan starts, it rotates using the starting pulse width modulation (PWM) specified in the **Fan 3 Start PWM** option below. To select a value, select the **CPU Temp. Limit of Start** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

- **CPU Fan Start PWM [070]**

The **Fan 3 Start PWM** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Fan 3 Start PWM** option to select the PWM mode the fan starts to rotate with after the temperature specified in the **Temperature 3 Limit of Start** is exceeded. The Super I/O chipset supports 128 PWM modes. To select a value, select the **Fan 3 Start PWM** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- PWM Minimum Mode: 0
- PWM Maximum Mode: 127

- **Slope PWM   [0.5 PWM]**

The **Slope PWM 1** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Slope PWM 1** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. A list of available options is shown below:

- 0 PWM
- 1 PWM
- 2 PWM
- 4 PWM
- 8 PWM
- 16 PWM
- 32 PWM

- 64 PWM

The following system parameters and values are shown. The system parameters that are monitored are:

- **System Temperatures**: The following system temperatures are monitored
  - CPU Temperature
  - System Temperature
- **Fan Speeds**: The CPU cooling fan speed is monitored.
  - CPU Fan Speed
- **Voltages**: The following system voltages are monitored
  - CPU Core
  - +1.05 V
  - +3.30 V
  - +5.00 V
  - +12.0 V
  - +1.5 V
  - +1.8 V
  - 5 VSB
  - VBAT

5.3.6 Power Configuration

The **Power Configuration** menu (BIOS Menu 9) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.

```
                        BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

                                                    Default set
                                                    AUTO is detect
  Select AT/ATX Power            [BY HARDWARE]      power supply status

  ▶ ACPI Configuration                              If set AT Power
  ▶ APM Configuration                               Power State will Auto
                                                    set Power On




                                                    ←→    Select Screen
                                                    ↑↓    Select Item
                                                    +-    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit


       v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
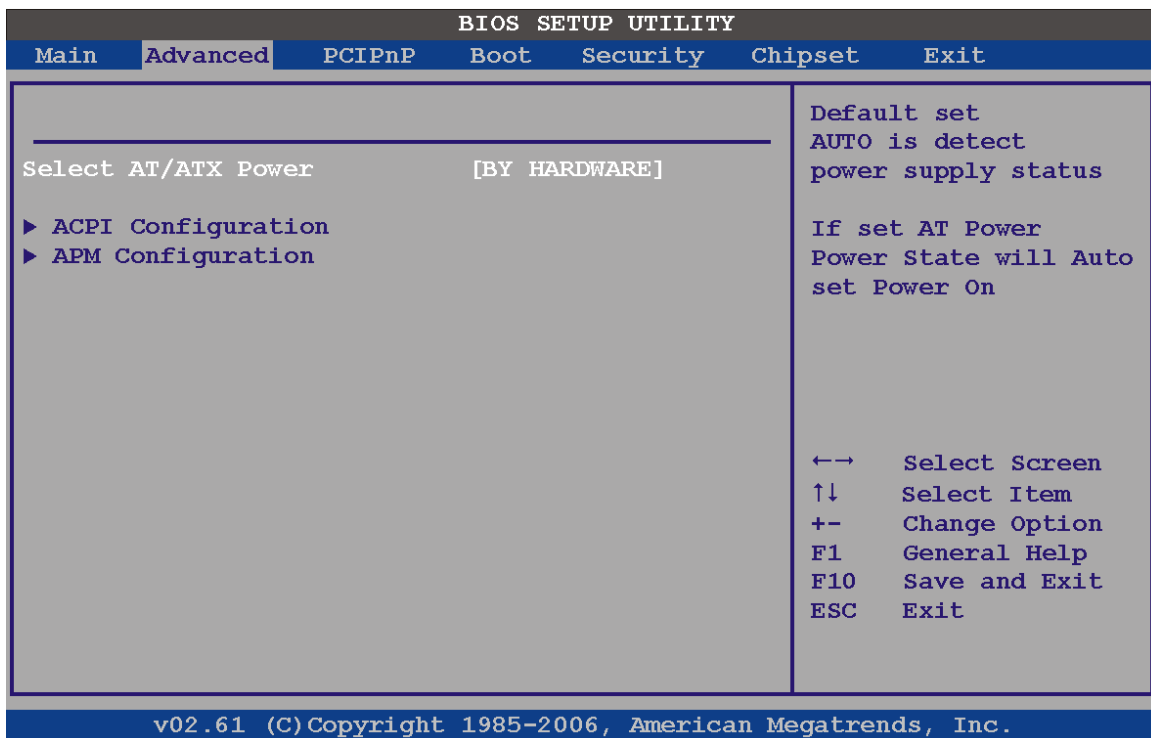
BIOS Menu 9: Power Configuration

▪ **Select AT/ATX Power [ATX Power]**

Use the **Select AT/ATX Power** option to set the power mode of the system.

➔ **AT Power**   Use AT power

➔ **ATX Power**   Use ATX power

➔ **BY HARDWARE**   DEFAULT   Select AT or ATX power according to the hardware jumper settings

5.3.6.1 ACPI Configuration

The **ACPI Configuration** menu (BIOS Menu 10) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.

```
                           BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

   ACPI Settings                                    Select the ACPI stae
                                                    used for System
   Suspend Mode              [S1 (POS)]             Suspend




                                                    ←→    Select Screen
                                                    ↑↓    Select Item
                                                    +-    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit




        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
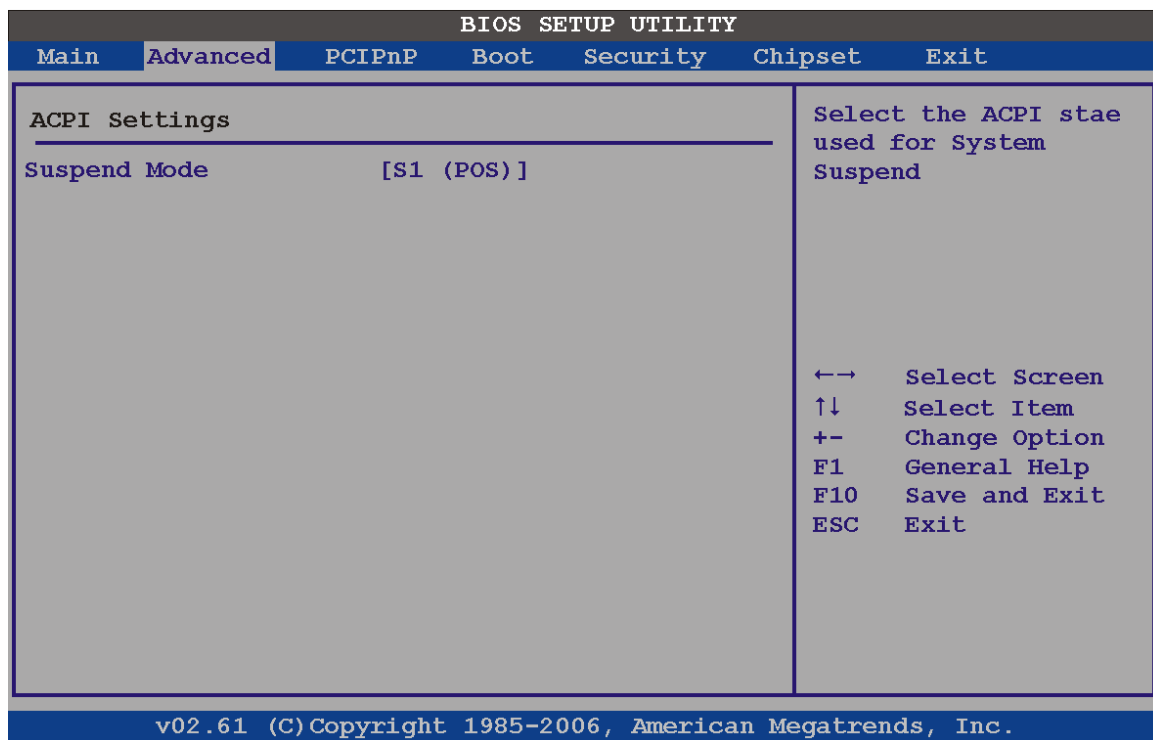
BIOS Menu 10: ACPI Configuration

▪ **Suspend Mode [S1(POS)]**

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** DEFAULT The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

5.3.6.2 APM Configuration

The **APM Configuration** menu (BIOS Menu 11) allows the advanced power management options to be configured.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

   APM Configuration                                Options


   Restore on AC Power Loss        [Power On]       Power Off
   Power Button Mode               [On/Off]         Power On
                                                    Last State
   Advanced Resume Event Controls
      Resume On Keyboard/Mouse        [Disabled]
      Resume On Ring                  [Disabled]
      Resume On PCI-Express WAKE#     [Enabled]
      Resume On RTC Alarm             [Disabled]


                                                    ←→    Select Screen
                                                    ↑↓    Select Item
                                                    +-    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit


          v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 11:Advanced Power Management Configuration

▪ **Restore on AC Power Loss [Power On]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**   The system remains turned off

➔ **Power On**   DEFAULT   The system turns on

➔ **Last State**   The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

▪ **Power Button Mode [On/Off]**

Use the **Power Button Mode** BIOS to specify how the power button functions.

➔ **On/Off**   DEFAULT   When the power button is pressed the system is either turned on or off

➔ **Suspend**   When the power button is pressed the system goes into suspend mode

▪ **Resume on Keyboard/Mouse [Disabled]**

Use the **Resume on Keyboard/Mouse** BIOS option to enable activity on either the keyboard or mouse to rouse the system from a suspend or standby state. That is, the system is roused when the mouse is moved or a button on the keyboard is pressed.

➔ **Disabled**   DEFAULT   Wake event not generated by activity on the keyboard or mouse

➔ **Enabled**   Wake event generated by activity on the keyboard or mouse

▪ **Resume on Ring [Disabled]**

Use the **Resume on Ring** BIOS option to enable activity on the RI (ring in) modem line to rouse the system from a suspend or standby state. That is, the system will be roused by an incoming call on a modem.

➔ **Disabled**   DEFAULT   Wake event not generated by an incoming call

➔ **Enabled**   Wake event generated by an incoming call

▪ **Resume on PCI-Express WAKE# [Enabled]**

Use the **Resume PCI-Express WAKE#** BIOS option to enable activity on the PCI-Express WAKE# signal to rouse the system from a suspend or standby state.

➔ **Disabled**   Wake event not generated by PCI-Express WAKE# signal activity

➔ **Enabled**   DEFAULT   Wake event generated by PCI-Express WAKE# signal activity

▪ **Resume On RTC Alarm [Disabled]**

Use the **Resume On RTC Alarm** option to specify the time the system should be roused from a suspended state.

➔ **Disabled**   DEFAULT   The real time clock (RTC) cannot generate a wake event

➔ **Enabled**   If selected, the following appears with values that can be selected:

    - **RTC Alarm Date (Days)**

    - **RTC Alarm Time**

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.7 Remote Configuration

Use the **Remote Access Configuration** menu (BIOS Menu 12) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.

```
                          BIOS SETUP UTILITY
   Main     Advanced    PCIPnP    Boot    Security   Chipset    Exit

 Configure Remote Access type and parameters        Select Remote Access
                                                     type.
 Remote Access                     [Disabled]



                                                     ←→    Select Screen
                                                     ↑↓    Select Item
                                                     +-    Change Option
                                                     F1    General Help
                                                     F10   Save and Exit
                                                     ESC   Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
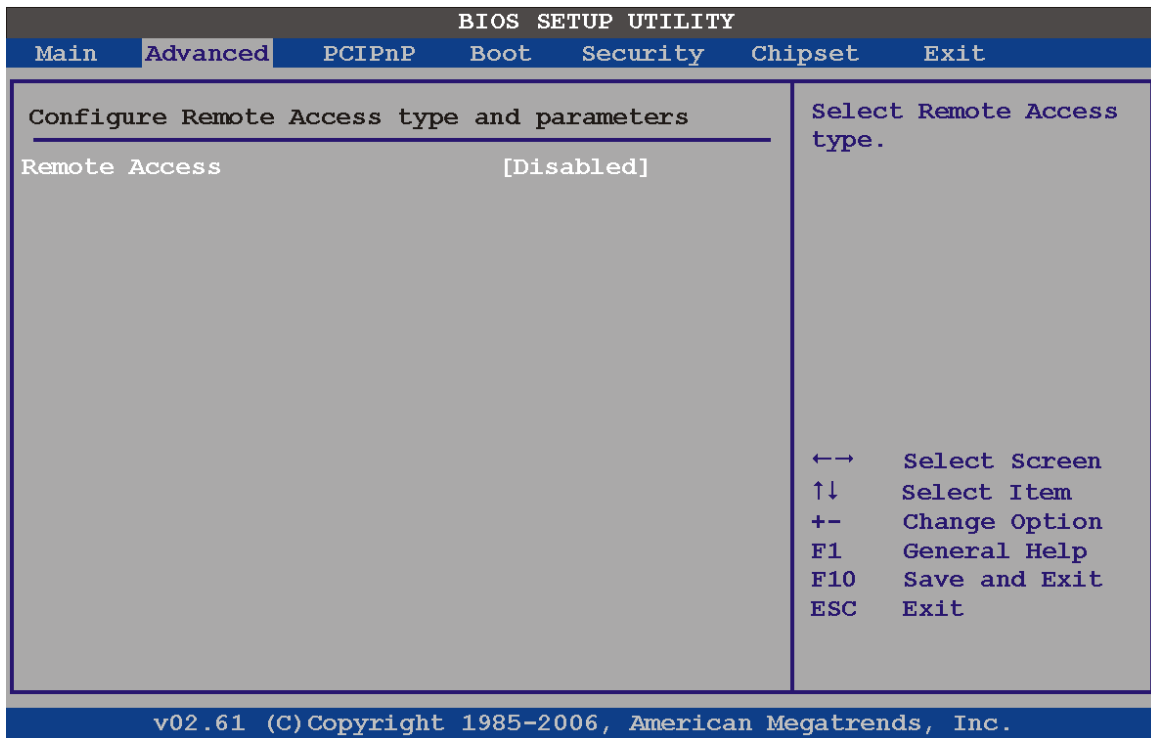
BIOS Menu 12: Remote Access Configuration

▪ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled**   DEFAULT   Remote access is disabled.

➔ **Enabled**   Remote access configuration options shown below
appear:

- **Serial Port Number**

- **Serial Port Mode**

- **Flow Control**

- **Redirection after BIOS POST**

- **Terminal Type**

- **VT-UTF8 Combo Key Support**

These configuration options are discussed below.

▪ **Serial Port Number [COM1]**

Use the **Serial Port Number** option allows to select the serial port used for remote
access.

➔ **COM1** **DEFAULT**   System is remotely accessed through COM1

➔ **COM2**   System is remotely accessed through COM2

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration
menu.

▪ **Base Address, IRQ [2F8h,3]**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt
address of the serial port listed above.

▪ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection
is made. The following configuration options are available

- 115200 8,n,1 DEFAULT
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

> **NOTE:**
>
> Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

- **Flow Control [None]**

    Use the **Flow Control** option to report the flow control method for the console redirection application.

    ➔ **None**   DEFAULT   No control flow,

    ➔ **Hardware**   Hardware is set as the console redirection

    ➔ **Software**   Software is set as the console redirection

- **Redirection After BIOS POST [Always]**

    Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

    ➔ **Disabled**   The console is not redirected after POST

    ➔ **Boot Loader**   Redirection is active during POST and during Boot Loader

    ➔ **Always**   DEFAULT   Redirection is always active (Some OSes may not work if set to Always)

- **Terminal Type [ANSI]**

    Use the **Terminal Type** BIOS option to specify the remote terminal type.

    ➔ **ANSI**   DEFAULT   The target terminal type is ANSI

    ➔ **VT100**   The target terminal type is VT100

    ➔ **VT-UTF8**   The target terminal type is VT-UTF8

▪ **VT-UTF8 Combo Key Support [Disabled]**

Use the **VT-UFT8 Combo Key Support** option to enable additional keys that are not provided by VT100 for the PC 101 keyboard.

The VT100 Terminal Definition is the standard convention used to configure and conduct emergency management tasks with UNIX-based servers. VT100 does not support all keys on the standard PC 101-key layout, however. The VT-UTF8 convention makes available additional keys that are not provided by VT100 for the PC 101 keyboard.

➔ **Disabled** DEFAULT   Disables the VT-UTF8 terminal keys

➔ **Enabled**   Enables the VT-UTF8 combination key. Support for ANSI/VT100 terminals

▪ **Sredir Memory Display Delay [Disabled]**

Use the **Sredir Memory Display Delay** option to select the delay before memory information is displayed. Configuration options are listed below

    ▪ No Delay   DEFAULT
    ▪ Delay 1 sec
    ▪ Delay 2 sec
    ▪ Delay 4 sec

5.3.8 USB Configuration

Use the **USB Configuration** menu (BIOS Menu 13) to read USB configuration information and configure the USB settings.

```
                         BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  USB Configuration                                Options

  Module Version - 2.24.3-13.4                     Disabled
                                                   Enabled
  USB Devices Enabled :
            None

  USB Functions              [Enabled]
  USB 2.0 Controller         [Enabled]
  Legacy USB Support         [Enabled]
  USB 2.0 Controller Mode    [HiSpeed]

                                                   ←→     Select Screen
                                                   ↑↓     Select Item
                                                   +-     Change Option
                                                   F1     General Help
                                                   F10    Save and Exit
                                                   ESC    Exit

        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 13: USB Configuration

▪ **USB Functions [Enabled]**

Use the **USB Function** option to enable or disable the USB controllers.

➔ **Disabled**   USB controllers are enabled

➔ **Enabled**   DEFAULT   USB controllers are disabled

▪ **USB 2.0 Controller [Enabled]**

The **USB 2.0 Controller** BIOS option enables or disables the USB 2.0 controller

➔ **Disabled**   USB function disabled

➔ **Enabled**   DEFAULT   USB function enabled

▪ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**　　　　　　　Legacy USB support disabled

➔ **Enabled**　　DEFAULT　　Legacy USB support enabled

➔ **Auto**　　　　　　　　　Legacy USB support disabled if no USB devices are connected

▪ **USB2.0 Controller Mode [HiSpeed]**

The **USB2.0 Controller Mode** BIOS option sets the speed of the USB2.0 controller.

➔ **FullSpeed**　　　　　　The controller is capable of operating at full speed 12 Mb/s

➔ **HiSpeed**　　DEFAULT　　The controller is capable of operating at high speed 480 Mb/s

5.4 PCI/PnP

Use the PCI/PnP menu (BIOS Menu 14) to configure advanced PCI and PnP settings.

> ⚠ **WARNING:**
>
> Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.

```
                         BIOS SETUP UTILITY
     Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

    Advanced PCI/PnP Settings                      Available: Specified
                                                   IRQ is available to
    IRQ3                        [Reserved]         be use by PCI/PnP
    IRQ4                        [Reserved]         devices.
    IRQ5                        [Available]        Reserved: Specified
    IRQ7                        [Available]        IRQ is reserved for
    IRQ9                        [Available]        use by legacy ISA
    IRQ10                       [Reserved]         devices.
    IRQ11                       [Reserved]
    IRQ14                       [Available]
    IRQ15                       [Available]

    DMA Channel 0               [Available]        ←→    Select Screen
    DMA Channel 1               [Available]        ↑↓    Select Item
    DMA Channel 3               [Available]        +-    Change Option
    DMA Channel 5               [Available]        F1    General Help
    DMA Channel 6               [Available]        F10   Save and Exit
    DMA Channel 7               [Available]        ESC   Exit

    Reserved Memory Size        [Disabled]

         v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 14: PCI/PnP Configuration

▪ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available**   DEFAULT   The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved**   The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

▪ IRQ3
▪ IRQ4
▪ IRQ5
▪ IRQ7
▪ IRQ9

- ▪ IRQ10
- ▪ IRQ 11
- ▪ IRQ 14
- ▪ IRQ 15

▪ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available**   **DEFAULT**   The specified DMA is available to be used by PCI/PnP devices

➔ **Reserved**   The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- ▪ DM Channel 0
- ▪ DM Channel 1
- ▪ DM Channel 3
- ▪ DM Channel 5
- ▪ DM Channel 6
- ▪ DM Channel 7

▪ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔ **Disabled**   **DEFAULT**   No memory block reserved for legacy ISA devices

➔ **16K**   16 KB reserved for legacy ISA devices

➔ **32K**   32 KB reserved for legacy ISA devices

➔ **64K**   54 KB reserved for legacy ISA devices

5.5 Boot

Use the Boot menu (BIOS Menu 15) to configure system boot options.

```
                          BIOS SETUP UTILITY
    Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  Boot Settings                                Configure Settings
  ──────────────────────────────────────      during System Boot
  ▶ Boot Settings Configuration

  ▶ Boot Device Priority
  ▶ Hard Disk Drives
  ▶ CD/DVD Drives
  ▶ Removable Drives



                                              ←→    Select Screen
                                              ↑↓    Select Item
                                              Enter Go to SubScreen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit


       v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 15: Boot

5.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (BIOS Menu 15) to configure advanced system boot options.

```
                            BIOS SETUP UTILITY
    Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

   Boot Settings Configuration                       Allows BIOS to skip
                                                     certain tests while
   Quick Boot                   [Enabled]            booting. This will
   Quiet Boot                   [Enabled]            decrease the time
   AddOn ROM Display Mode       [Force BIOS]         needed to boot the
   Bootup Num-Lock              [Off]                system.
   Boot From LAN                [Disabled]



                                                     ←→    Select Screen
                                                     ↑↓    Select Item
                                                     +-    Change Option
                                                     F1    General Help
                                                     F10   Save and Exit
                                                     ESC   Exit

         v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 16: Boot Settings Configuration

▪ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**   No POST procedures are skipped

➔ **Enabled**   DEFAULT   Some POST procedures are skipped to decrease the system boot time

▪ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**   Normal POST messages displayed

➔ **Enabled**   DEFAULT   OEM Logo displayed instead of POST messages

▪ **AddOn ROM Display Mode [Force BIOS]**

The **AddOn ROM Display Mode** option allows add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**   DEFAULT   Allows the computer system to force a third party BIOS to display during system boot.

➔ **Keep Current**   Allows the computer system to display the information during system boot.

▪ **Bootup Num-Lock [Off]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to be modified during boot up.

➔ **Off**   DEFAULT   Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On**   Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

▪ **Boot From LAN Support [Disabled]**

The **BOOT From LAN Support** option enables the system to be booted from a remote system.
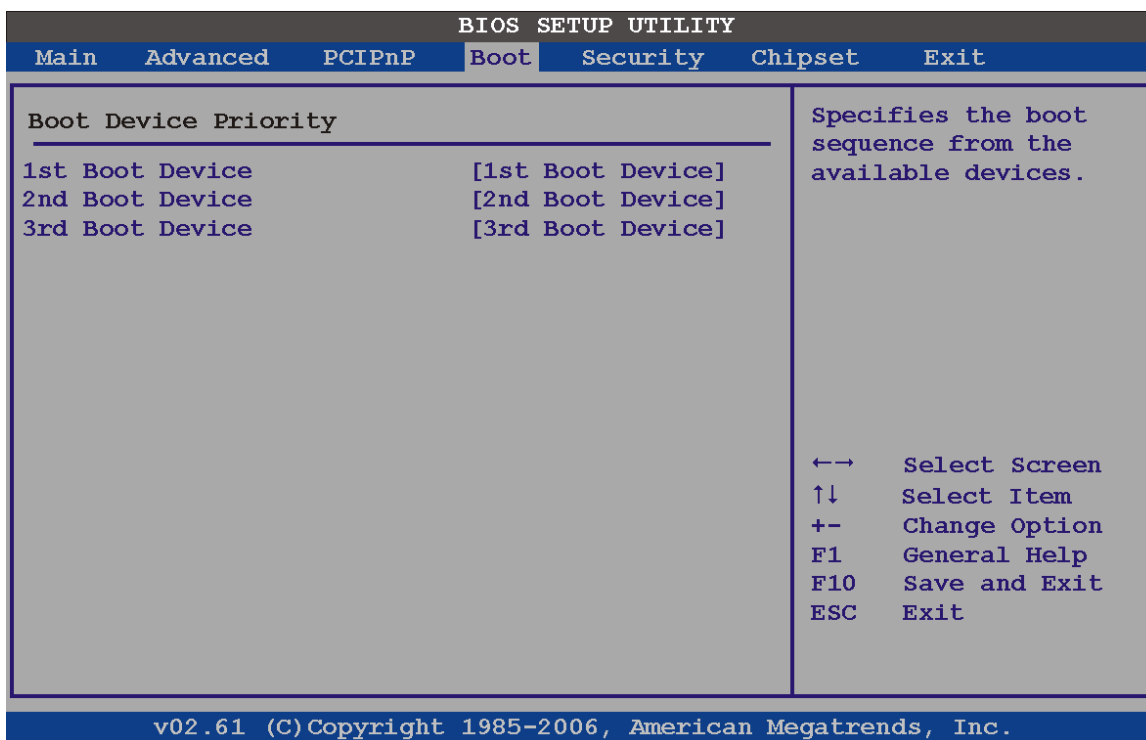
➔ **Disabled**   DEFAULT   Cannot be booted from a remote system through the LAN

➔ **Enabled**   DEFAULT   Can be booted from a remote system through the LAN

5.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (BIOS Menu 17) to specify the boot sequence from the available devices. The following options are available:

- 1st Boot Device
- 2nd Boot Device
- 3rd Boot Device

```
                         BIOS SETUP UTILITY
    Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

 Boot Device Priority                              Specifies the boot
 ───────────────────────────────────────────      sequence from the
 1st Boot Device          [1st Boot Device]        available devices.
 2nd Boot Device          [2nd Boot Device]
 3rd Boot Device          [3rd Boot Device]




                                                   ←→   Select Screen
                                                   ↑↓   Select Item
                                                   +-   Change Option
                                                   F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 17: Boot Device Priority Settings

5.5.3 Hard Disk Drives

Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:
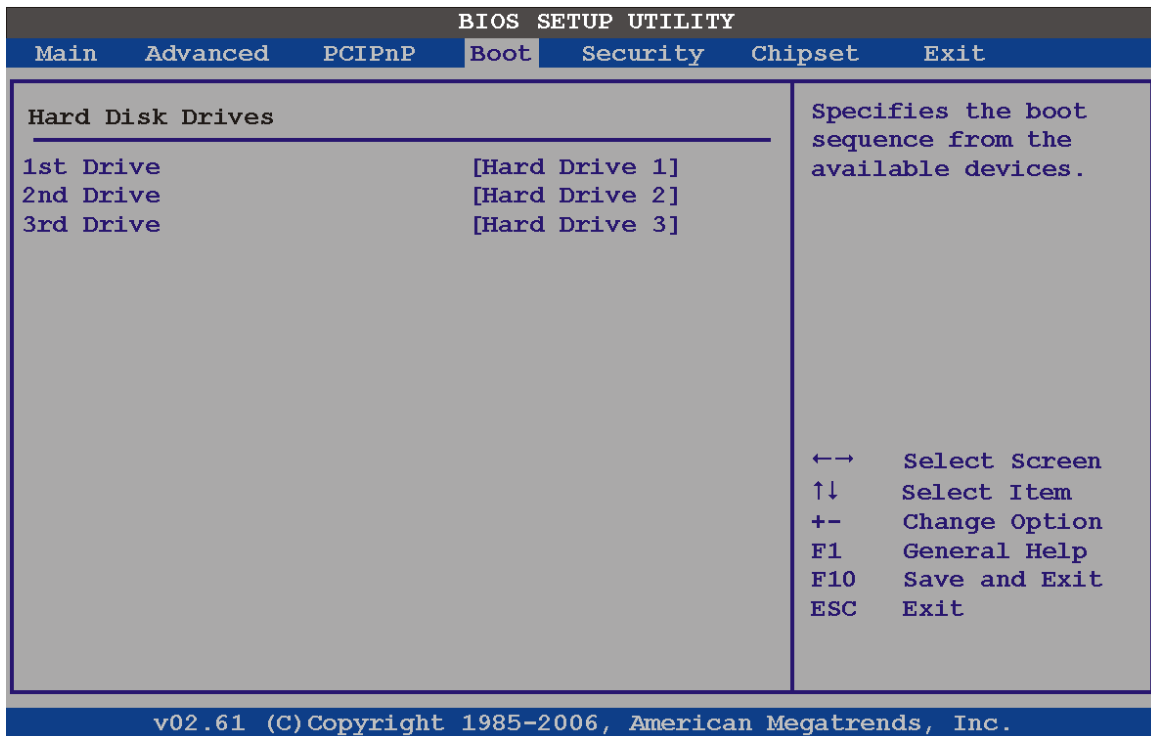
- 1st Drive
- 2nd Drive

- 3rd Drive

NOTE:

Only installed drives are shown in the list.

```
                          BIOS SETUP UTILITY
 Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

 Hard Disk Drives                              Specifies the boot
 ─────────────────────────────────────        sequence from the
 1st Drive                   [Hard Drive 1]    available devices.
 2nd Drive                   [Hard Drive 2]
 3rd Drive                   [Hard Drive 3]




                                              ←→    Select Screen
                                              ↑↓    Select Item
                                              +-    Change Option
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit


      v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
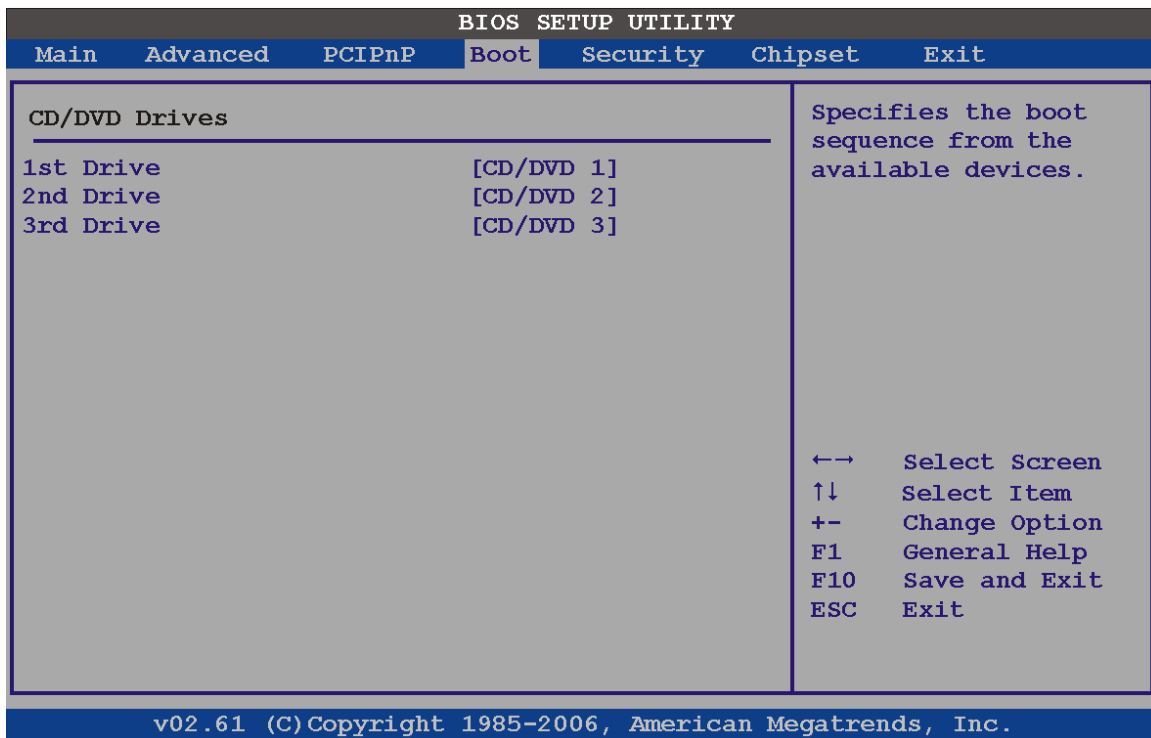
BIOS Menu 18: Hard Disk Drives

5.5.4 CD/DVD Drives

Use the **CD/DVD Drives** menu to specify the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

- 1st Drive
- 2nd Drive
- 3rd Drive

NOTE:

Only installed CD and DVD drives are shown in the list

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

  CD/DVD Drives                                  Specifies the boot
                                                 sequence from the
  1st Drive                  [CD/DVD 1]          available devices.
  2nd Drive                  [CD/DVD 2]
  3rd Drive                  [CD/DVD 3]




                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit


       v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 19: CD/DVD Drives

5.5.5 Removable Drives

Use the **Removable Drives** menu (BIOS Menu 20) to specify the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

- 1st Drive
- 2nd Drive

NOTE:

Only installed floppy drives are shown in the list.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  Removable Drives                               Specifies the boot
                                                 sequence from the
  1st Drive                  [Removable Drive 1] available devices.
  2nd Drive                  [Removable Drive 2]
  3rd Drive                  [Removable Drive 3]




                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
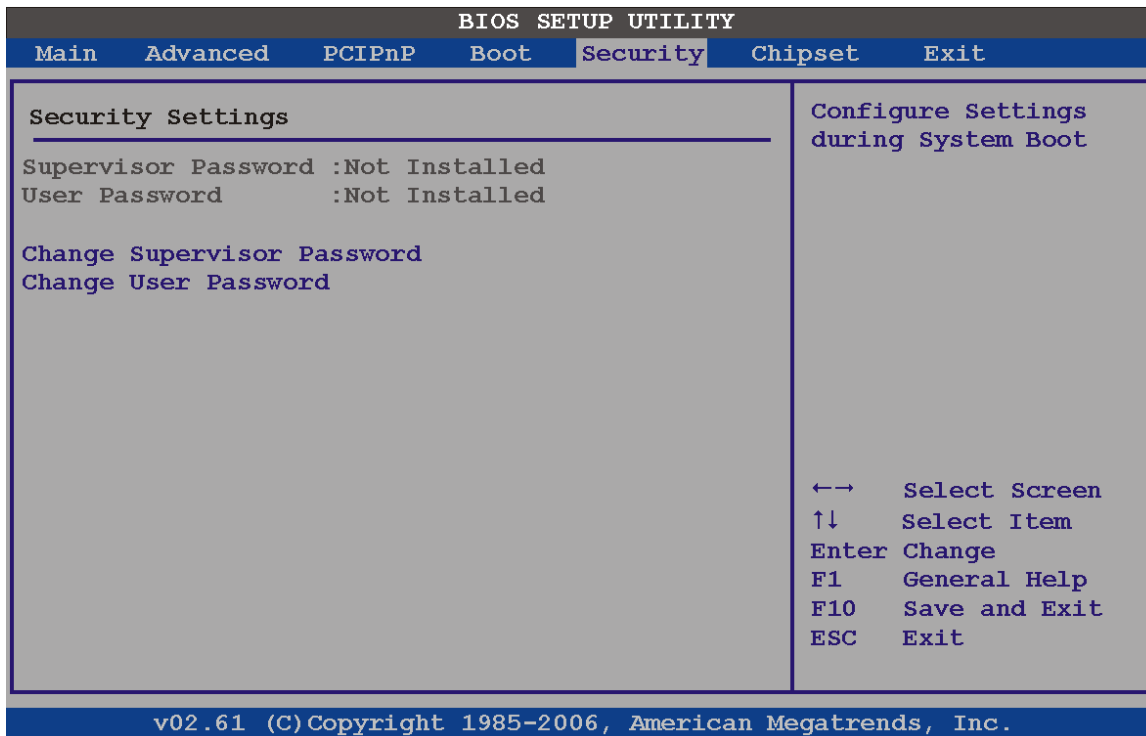
BIOS Menu 20: Removable Drives

5.6 Security

Use the Security menu (BIOS Menu 21) to set system and user passwords.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

 Security Settings                              Configure Settings
                                                during System Boot
 Supervisor Password :Not Installed
 User Password        :Not Installed

 Change Supervisor Password
 Change User Password




                                                ←→    Select Screen
                                                ↑↓    Select Item
                                                Enter Change
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit

        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 21: Security

▪ **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

▪ **Change User Password**

Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

Use the **Chipset** menu (BIOS Menu 22) to access the Northbridge and Southbridge configuration menus

---

⚠ WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```
                          BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security   Chipset     Exit

 Advanced Chipset Settings                        Options for NB

 WARNING: Setting wrong values in below sections
          may cause system to malfunction

 ▶ Northbridge Configuration
 ▶ Southbridge Configuration




                                                  ←→    Select Screen
                                                  ↑↓    Select Item
                                                  Enter Go to SubScreen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

          v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 22: Chipset

5.7.1 Northbridge Chipset Configuration

Use the **Northbridge Chipset Configuration** menu (BIOS Menu 22) to configure the Northbridge chipset settings.

```
                         BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

   Northbridge                                  Options

   Memory Hole                   [Disabled]
   Internal Graphics Mode Select  [Enabled, 8MB]

   Boot Graphic Adapter Priority  [PCI/IGD]

   ▶ Video Function Configuration


                                                ←→     Select Screen
                                                ↑↓     Select Item
                                                +-     Change Option
                                                F1     General Help
                                                F10    Save and Exit
                                                ESC    Exit


         v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
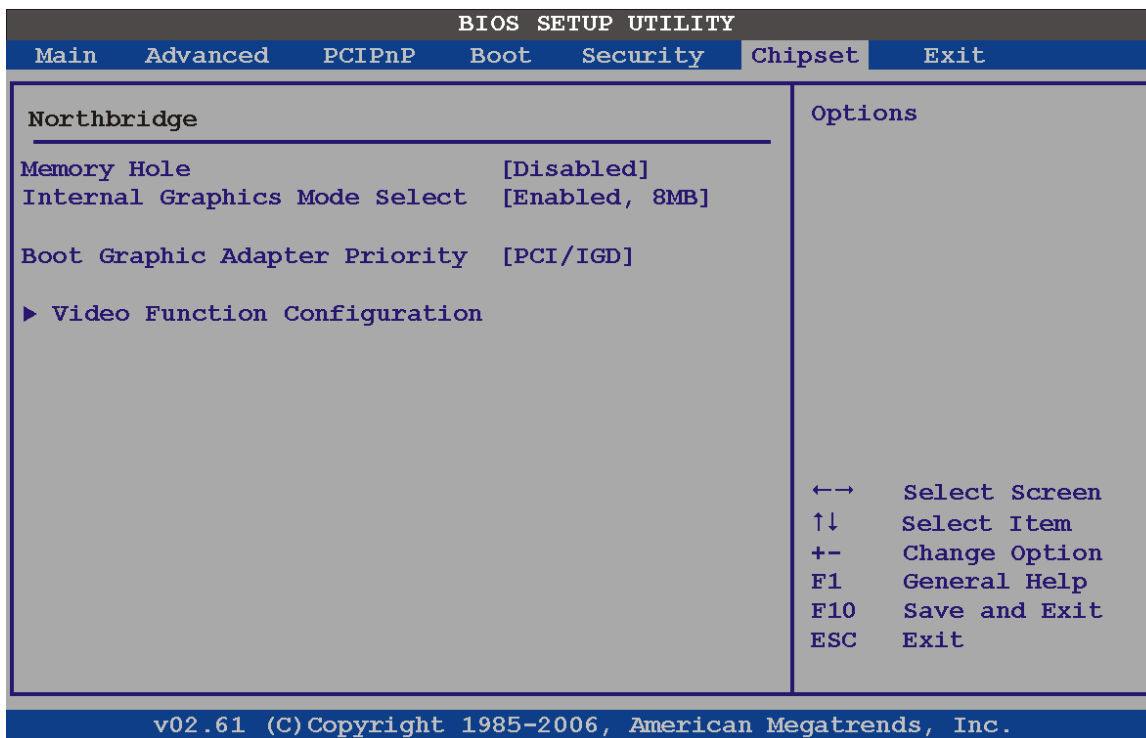
BIOS Menu 23: Northbridge Chipset Configuration

▪ **Memory Hole [Disabled]**

The **Memory Hole** reserves the memory space between 15 MB and 16 MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔ **Disabled**   DEFAULT   Memory is not reserved for ISA expansion cards

➔ **Enabled**   Memory is reserved for ISA expansion cards

▪ **Internal Graphics Mode Select [Enable, 8 MB]**

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**

➔ **Enable, 1 MB**   1 MB of memory used by internal graphics device

➔ **Enable, 8 MB**   DEFAULT   8 MB of memory used by internal graphics device

▪ **Boot Graphic Adapter Priority [PCI/IGD]**

The **Boot Graphic Adapter Priority** setting determines the priority of the attached graphics devices.

➔ **IGD**   Only the internal graphics devices are checked, these include VGA, LVDS, TV and SDVO.

➔ **PCI/IGD**   DEFAULT   Graphics cards connected to the PCI expansion card slots on the backplane are checked first for graphics cards. Next, the internal devices, mentioned above, are checked.

5.7.1.1 Video Function Configuration

Use the **Video Function Configuration** menu to configure the video device connected to the system.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Exit

  Video Function Configuration                   Options

  DVMT Mode Select                [DVMT Mode]
    DVMT/FIXED Memory             [128MB]

  Boot Display Device            [Auto]
  LVDS1 Panel Type               [by H/W]
  LVDS1 Current Jumper Setting   [800x600 18b]

  TV Standard                    [VBIOS-Default]



                                                 ←→     Select Screen
                                                 ↑↓     Select Item
                                                 +-     Change Option
                                                 F1     General Help
                                                 F10    Save and Exit
                                                 ESC    Exit


       v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 24: Video Function Configuration

▪ **DVMT Mode Select [DVMT Mode]**

Use the **DVMT Mode Select** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

➔ **Fixed Mode**   A fixed portion of graphics memory is reserved as graphics memory.

➔ **DVMT Mode**   DEFAULT   Graphics memory is dynamically allocated according to the system and graphics needs.

➔ **Combo Mode**

A fixed portion of graphics memory is reserved as graphics memory. If more memory is needed, graphics memory is dynamically allocated according to the system and graphics needs.

▪ **DVMT/FIXED Memory**

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. This option can only be configured for if **DVMT Mode** or **Fixed Mode** is selected in the **DVMT Mode Selec**t option. If **Combo Mode** is selected, the maximum amount of graphics memory is 128 MB. Configuration options are listed below.

- ▪ 64 MB
- ▪ 128 MB   **DEFAULT**
- ▪ Maximum DVMT

▪ **Boot Display Device [Auto]**

The **Boot Display Device** BIOS option selects the display device the system uses when it boots. The available options are listed below:

- ▪ Auto   **DEFAULT**
- ▪ CRT
- ▪ TV
- ▪ EFP
- ▪ LFP

▪ **LVDS1 Panel Type**

Use the **LVDS Panel Type** to determine the LCD panel resolution. Configuration options are listed below:

- ▪ 640 x 480 18-bit
- ▪ 800 x 480 18-bit
- ▪ 800 x 600 18-bit
- ▪ 1024 x 768 18-bit

- 1280 x 1024 36-bit
- 1400 x 1050 36-bit
- 1440 x 900 36-bit
- 1600 x 1200 36-bit
- by H/W   Default

- **LCD Current Jumper Setting**

Use the **LCD Current Jumper Setting** shows the current setting of the screen resolution jumper.

- **TV Standard**

The **TV Standard** option specifies the TV type connected to the system.

- VBIOS   Default
- NTSC
- PAL
- SECAM
- SMPTE240M
- ITU-R television
- SMPTE295M
- SMPTE296M
- EIA-770.2
- EIA-770.3

5.7.2 Southbridge Configuration

The **Southbridge Configuration** menu (BIOS Menu 25) allows the Southbridge chipset to be configured.

```
                        BIOS SETUP UTILITY
   Main    Advanced   PCIPnP    Boot   Security  Chipset    Exit

  Southbridge                                      Options

  Audio Controller            [Azalia]
  Spread Spectrum Mode        [Enabled]



                                                ←→    Select Screen
                                                ↑↓    Select Item
                                                +-    Change Option
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit


       v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```
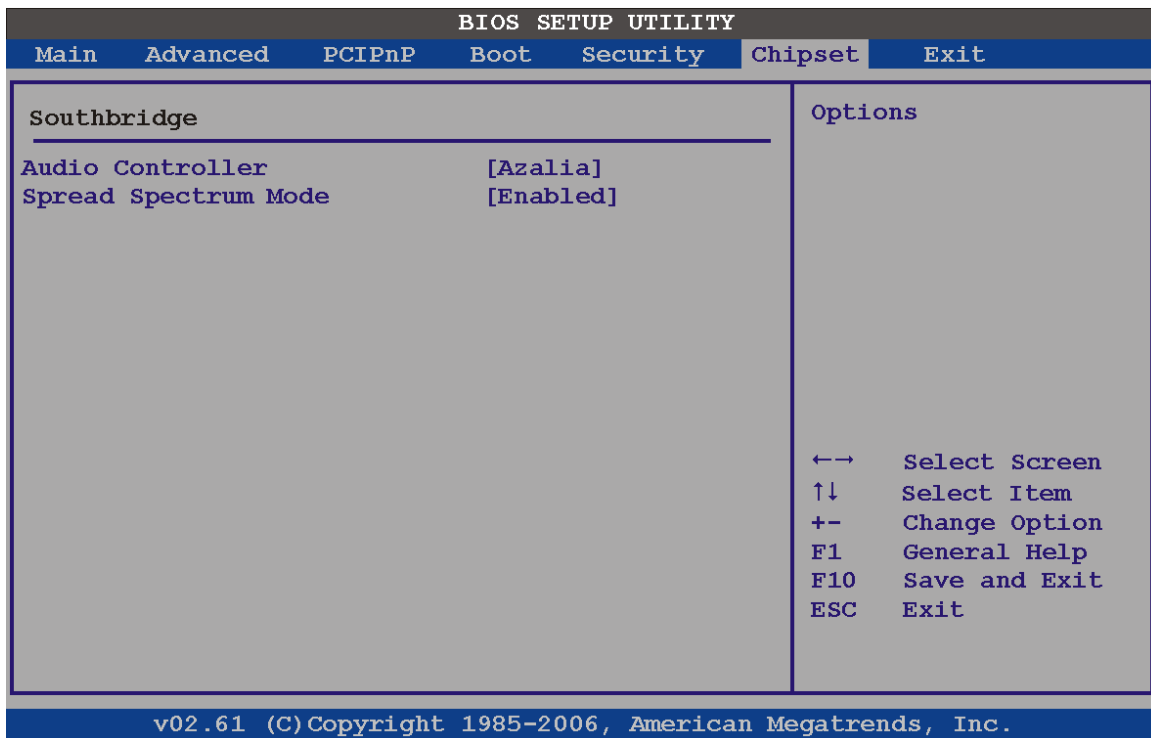
BIOS Menu 25: Southbridge Chipset Configuration

▪ **Audio Controller [All Disabled]**

The **Audio Controller** option enables or disables the audio controller.

➔ **Azalia**   DEFAULT   High Definition Audio is enabled

➔ **AC'97 Audio Only**   AC'97 audio is enabled

➔ **All Disabled**   Audio is disabled

▪ **Spread Spectrum Mode [Enabled]**

The **Spread Spectrum Mode** option can help to improve CPU EMI issues.

➔ **Disabled**   The spread spectrum mode is disabled

➔ **Enabled**   DEFAULT   The spread spectrum mode is enabled

5.8 Exit

Use the **Exit** menu (BIOS Menu 26) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
                           BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

   Exit Options                                    Exit system setup
   ─────────────────────────                       after saving the
   Save Changes and Exit                           changes.
   Discard Changes and Exit
   Discard Changes                                 F10 key can be used
                                                   for this operation.
   Load Optimal Defaults
   Load Failsafe Defaults




                                                   ←→    Select Screen
                                                   ↑↓    Select Item
                                                   Enter Go to SubScreen
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit

        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 26: Exit

▪ **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

▪ **Discard Changes and Exit**

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

▪ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

▪ **Load Optimal Defaults**

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

▪ **Load Failsafe Defaults**

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

6

Software Installation

6.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Chipset
- VGA
- LAN
- Audio
- iSMM

Installation instructions are given below.

6.2 Starting the Driver Program

To access the driver installation programs, please do the following.

Step 1: Insert the CD-ROM that came with the system into a CD-ROM drive attached to the system.

Step 2: The screen in Figure 6-1 appears.
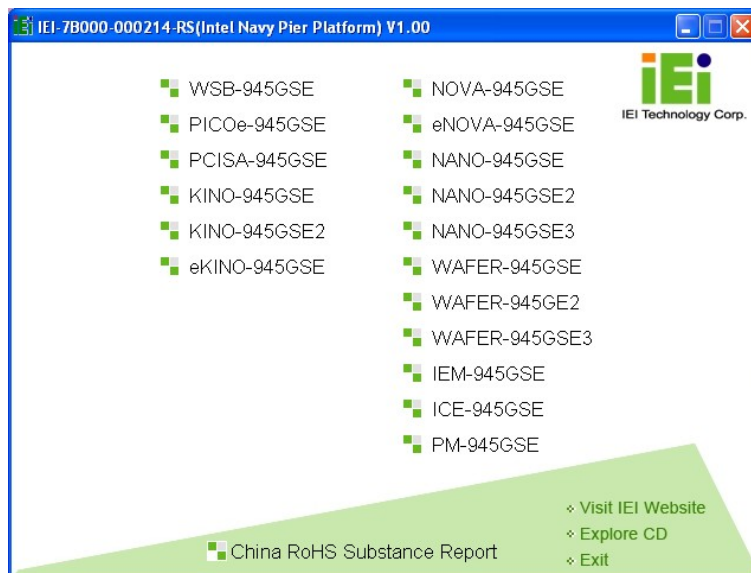
Figure 6-1: Start Up Screen

Step 3: Click **PCISA-945GSE**.

Step 4: The screen in Figure 6-2 appears.
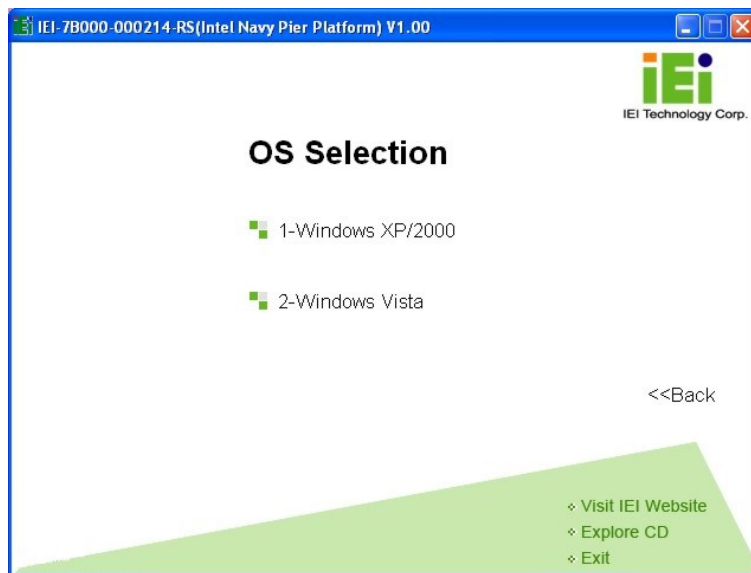
Figure 6-2: Select Operating System

Step 5: Select the operating system installed on the PCISA-945GSE system. This

manual describes the installation for a **Windows XP** operating system.

Step 6: The list of drivers in Figure 6-3 appears.
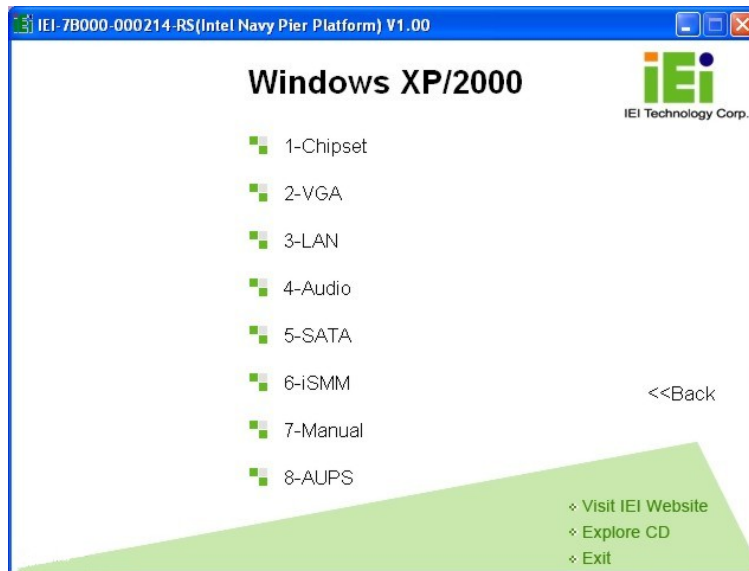
Figure 6-3: Drivers

6.3 Chipset Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list shown in Figure 6-3. (See **Section 6.2**)

Step 2: Click "**1-Chipset Driver**"

Step 3: When the setup files are completely extracted the **Welcome Screen** in

Figure 6-4 appears.

Figure 6-4: Chipset Driver Welcome Screen

Step 4:   Click **Next** to continue.

Step 5:   The license agreement in Figure 6-5 appears.

Figure 6-5: Chipset Driver License Agreement

Step 6:   Read the **License Agreement**.

Step 7:   Click the YES button to accept the license agreement and continue.

Step 8:   The Read Me file in Figure 6-6 appears.

Figure 6-6: Chipset Driver Read Me File

Step 9:   Click NEXT to continue.

Step 10: **Setup Operations** are performed as shown in Figure 6-7.
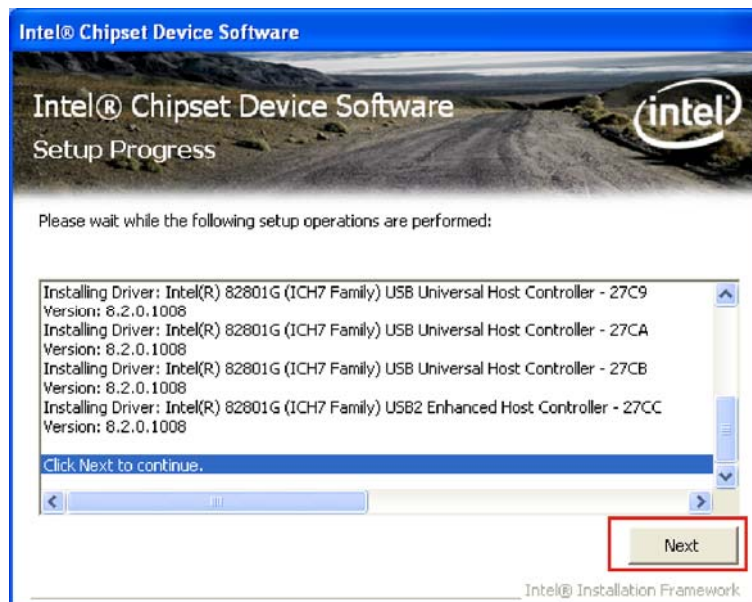
Figure 6-7: Chipset Driver Setup Operations

Step 11: Once the **Setup Operations** are complete, click the NEXT icon to continue.

Step 12: The **Finish** screen appears.

Figure 6-8: Chipset Driver Installation Finish Screen

Step 13: Select "**Yes, I want to restart the computer now**" and click the **Finish** icon.

See Figure 6-8.

6.4 VGA Driver Installation

To install the VGA driver, please do the following.

Step 1: Access the driver list shown in Figure 6-3. (See **Section 6.2**)

Step 2: Click "**2-VGA**"

Step 3: The VGA Read Me file in Figure 6-9 appears.
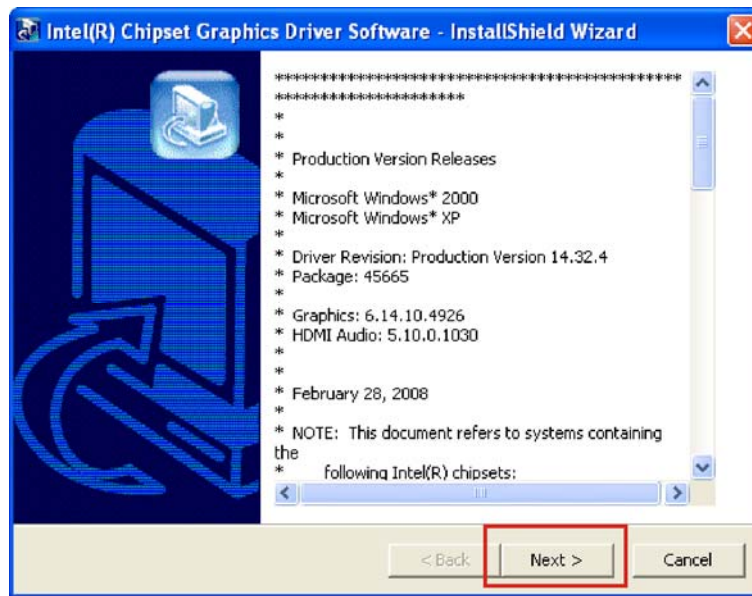
Figure 6-9: VGA Driver Read Me File

Step 4: Click NEXT to continue.

Step 5: The installation files are extracted. See Figure 6-10.
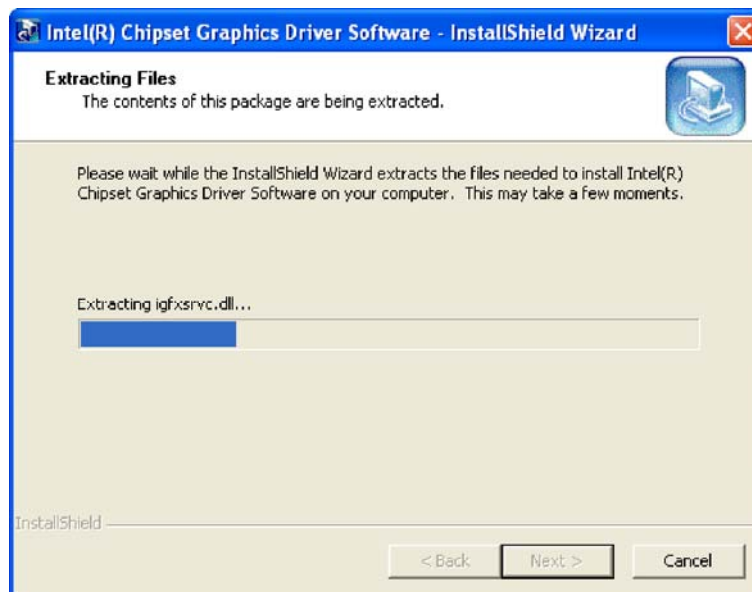
Figure 6-10: VGA Driver Setup Files Extracted

Step 6: The **Welcome Screen** in Figure 6-11 appears.

Figure 6-11: VGA Driver Welcome Screen

Step 7: Click NEXT to continue.

Step 8: The license agreement in Figure 6-12 appears.
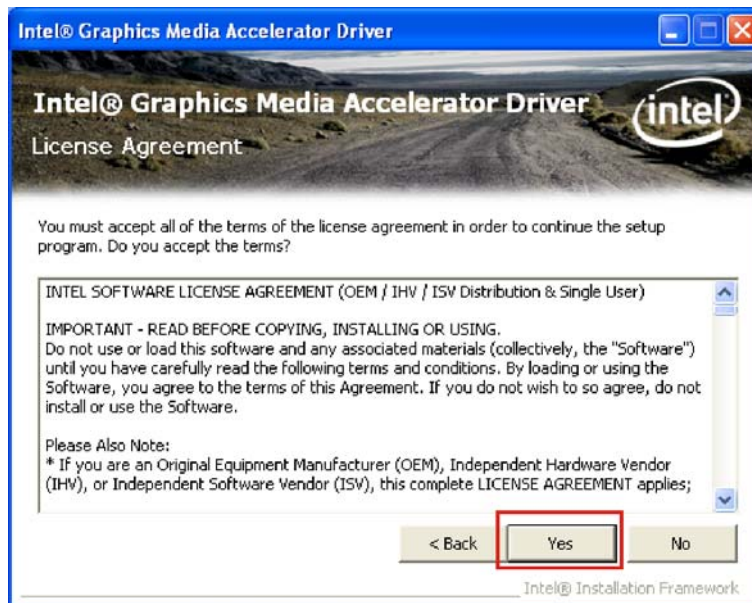
Figure 6-12: VGA Driver License Agreement

Step 9: Read the **License Agreement**.

Step 10: Click YES to accept the license agreement and continue.

Step 11: The Readme file in Figure 6-13 appears.
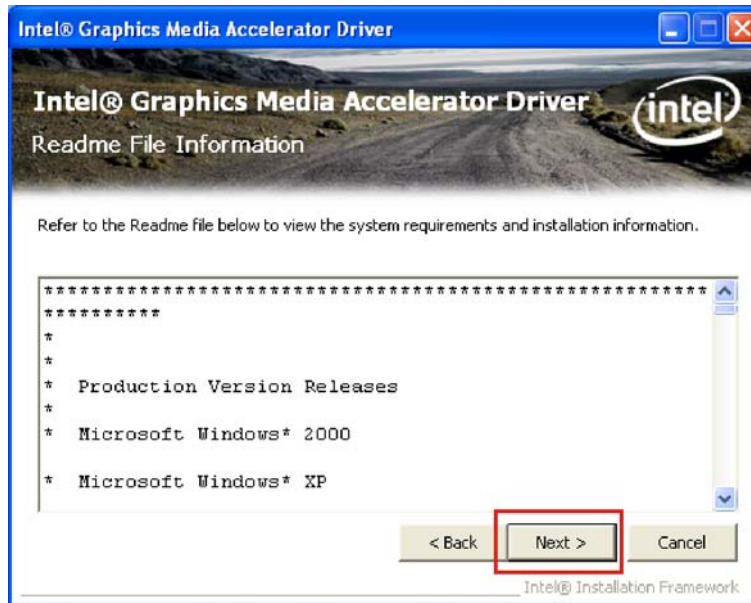
Figure 6-13: VGA Driver Read Me File

Step 12: Click NEXT to continue.

Step 13: **Setup Operations** are performed as shown in Figure 6-14.

![NOTE icon] **NOTE:**

The "Found New Hardware Wizard" will appear and then disappear during this step. Do not adjust any settings in the "Found New Hardware Wizard" window.
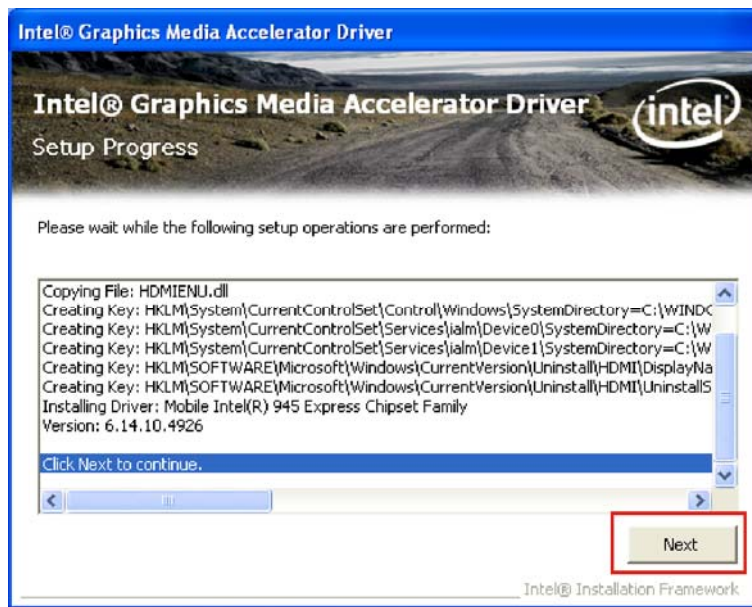
Figure 6-14: VGA Driver Setup Operations

Step 14: Once the **Setup Operations** are complete, click NEXT to continue.

Step 15: The **Finish** screen appears.
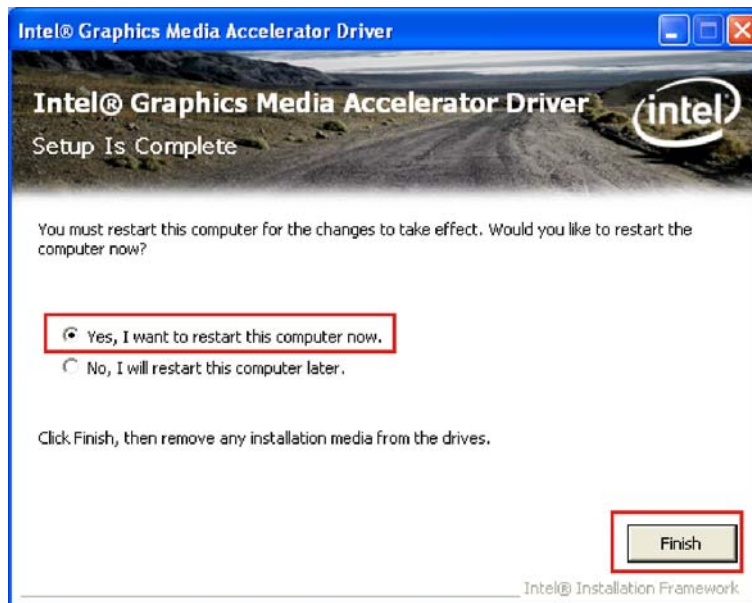
Figure 6-15: VGA Driver Installation Finish Screen

Step 16: Select "**Yes, I want to restart the computer now**" and click FINISH. See

Figure 6-15.

6.5 LAN Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list shown in Figure 6-3. (See **Section 6.2**)

Step 2: Click "**3-LAN**"

Step 3: The **Welcome** screen in Figure 6-16 appears.
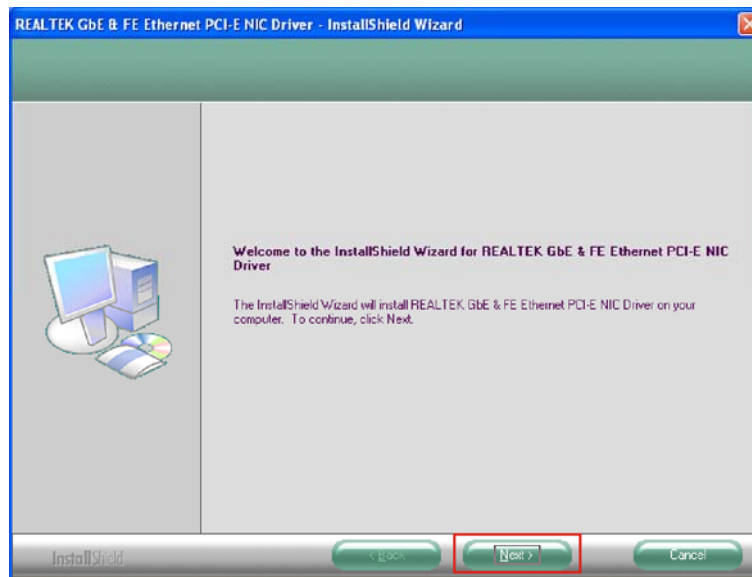
Figure 6-16: LAN Driver Welcome Screen

Step 4: Click NEXT to continue.

Step 5: The **Ready to Install** screen in Figure 6-17 appears.
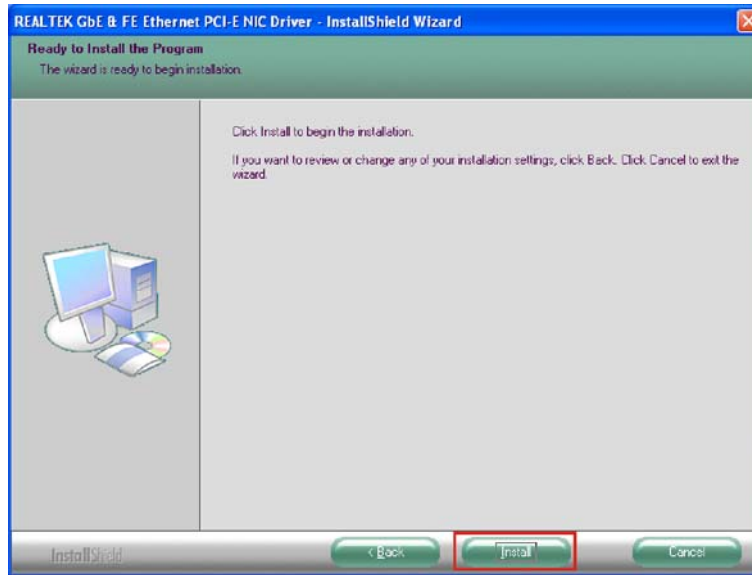
Figure 6-17: LAN Driver Welcome Screen

Step 6: Click **NEXT** to proceed with the installation.

Step 7: The program begins to install.

Step 8: The installation progress can be monitored in the progress bar shown in

Figure 6-18.
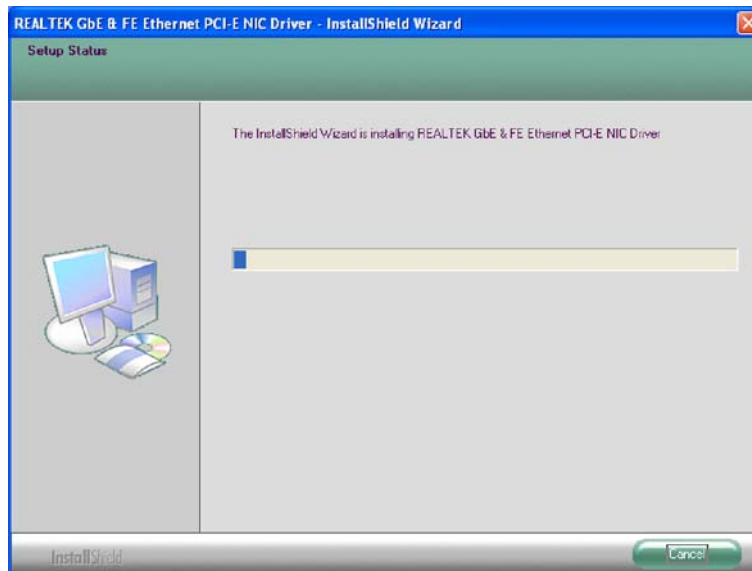
Figure 6-18: LAN Driver Installation

Step 9: When the driver installation is complete, the screen in Figure 6-19 appears.
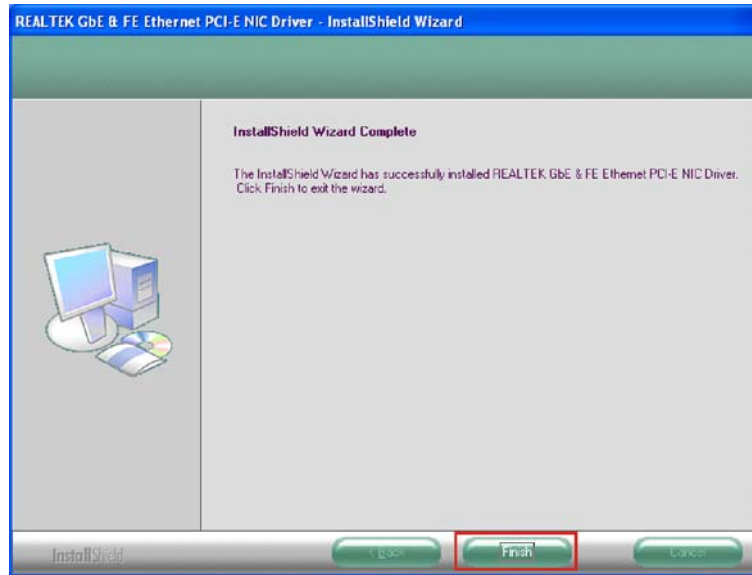
Figure 6-19: LAN Driver Installation Complete

Step 10: Click **FINISH** to exit the InstallShield Wizard (Figure 6-19).

6.6 Audio Driver Installation

There is no audio driver on the PCISA-945GSE. To add audio capabilities to the PCISA-945GSE, connect a HD Audio kit or AC'97 audio kit available from IEI. Follow the installation applicable to the installed audio kit.

6.6.1 AC'97 Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list shown in Figure 6-3. (See **Section 6.2**)

Step 2: Click "**4-Audio**"
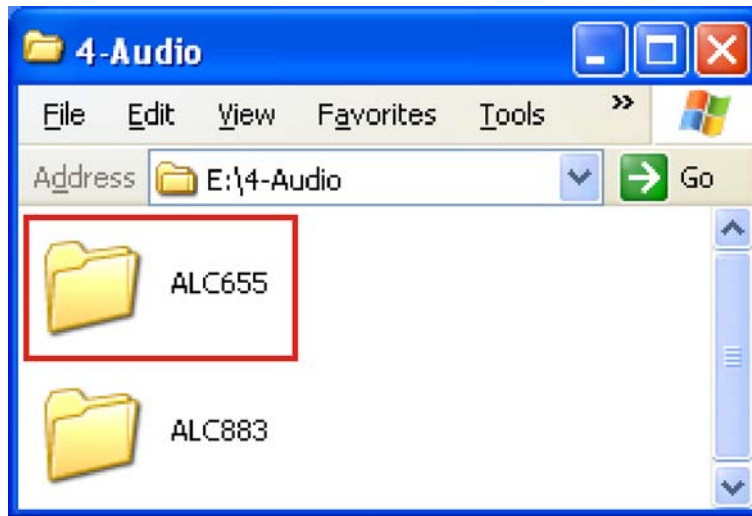
Figure 6-20: AC'97 Audio

Step 3: Browse to "**E:\4-Audio\ALC665\Windows\Windows 98Gold, 98se, Me, 2000, XP, 2003(32,64 bits)\A3.84**" Figure 6-21
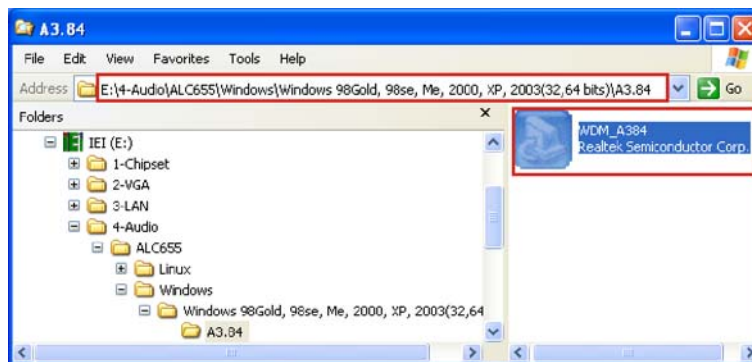
Figure 6-21: AC'97 Audio Driver Options

Step 4: Double-click the installation file in Figure 6-21.

Step 5: The AC'97 Driver Installation screen in Figure 6-22 appears.
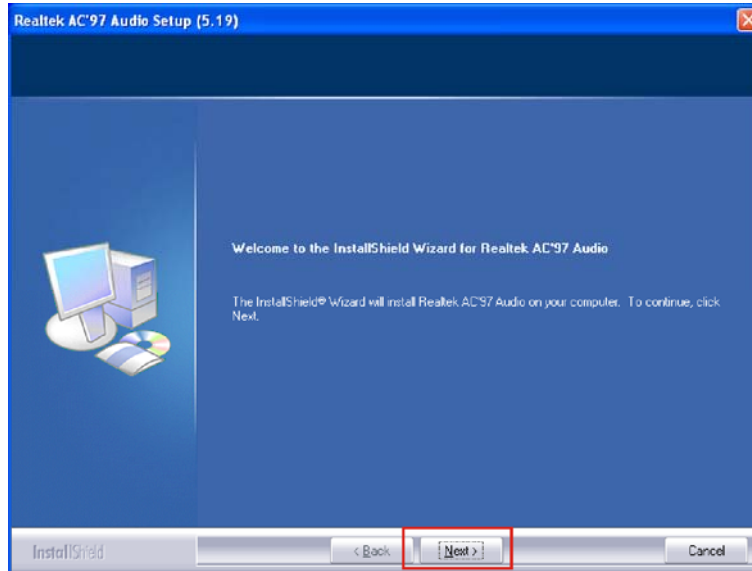
Figure 6-22: AC'97 Driver Installation Welcome Screen

Step 6: Click NEXT to continue.

Step 7: The Verification window in Figure 6-23 may appear.

Figure 6-23: AC'97 Driver Installation Verification

Step 8: Click CONTINUE ANYWAY.

Step 9: When the driver is installed, the driver installation finish screen in Figure 6-24 appears.
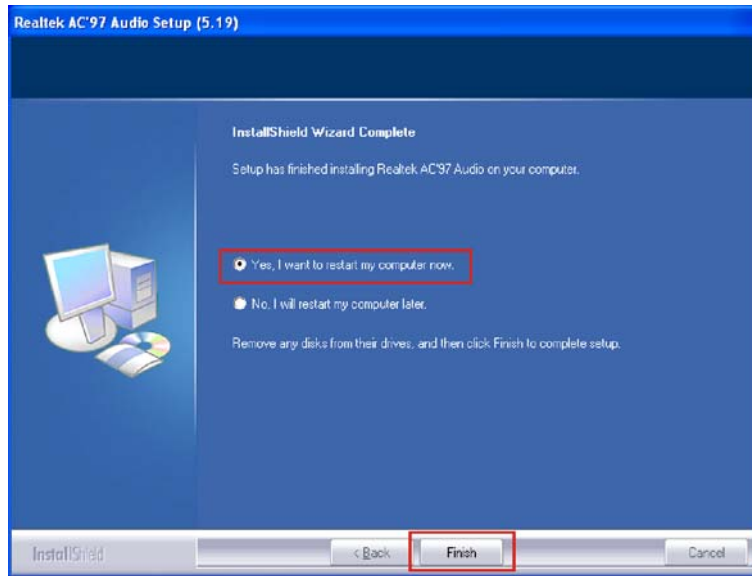
Figure 6-24: AC'97 Driver Installation Complete

Step 10: Select "**Yes, I wish to restart my computer now**" And click FINISH to exit the InstallShield Wizard and restart the computer.

6.6.2 HD Audio Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list shown in Figure 6-3. (See **Section 6.2**)

Step 2: Click "**4-Audio**"
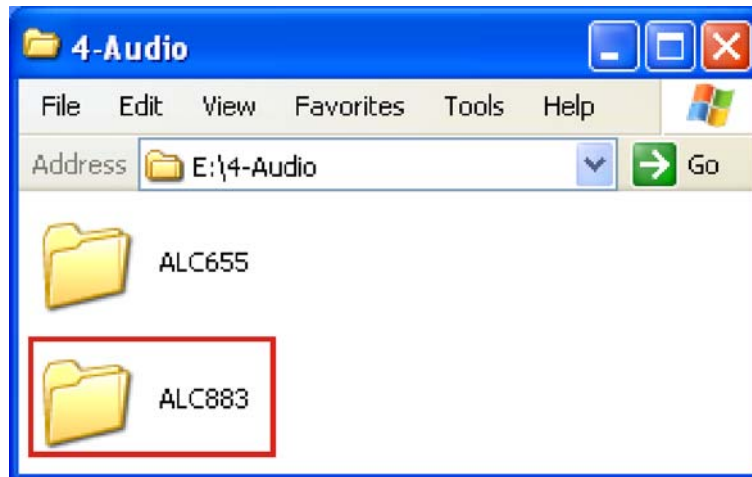
Figure 6-25: HD Audio

Step 3: Browse to "**E:\4-Audio\ALC883\Windows\Windows 2000, XP, 2003(32,64**

bits)" Figure 6-26
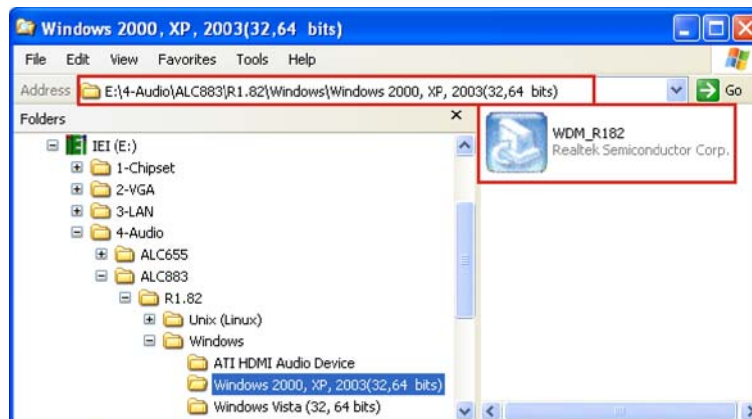
Figure 6-26: HD Audio Driver Options

Step 4:   Double-click the installation file in Figure 6-26.

Step 5:   The AC'97 Driver Installation screen in Figure 6-27 appears.
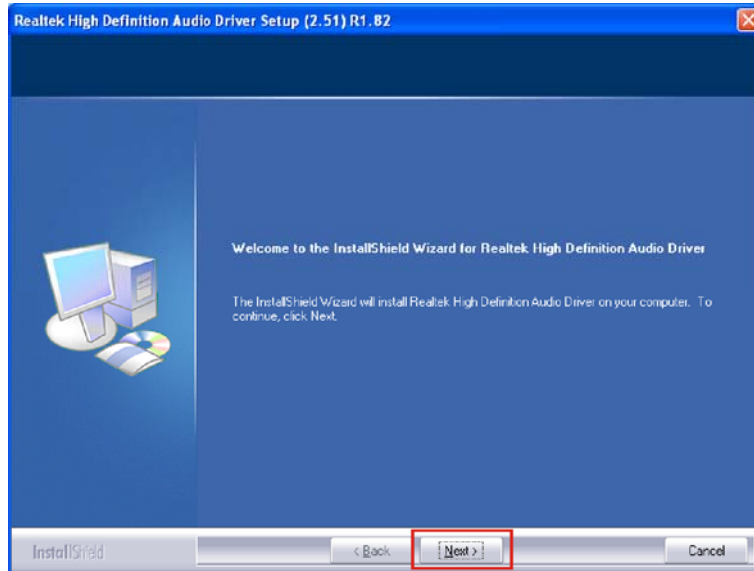
Figure 6-27: HD Audio Driver Installation Welcome Screen

Step 6:   Click **NEXT** to continue.

Step 7:   When the driver is installed, the driver installation finish screen in Figure 6-28

appears.
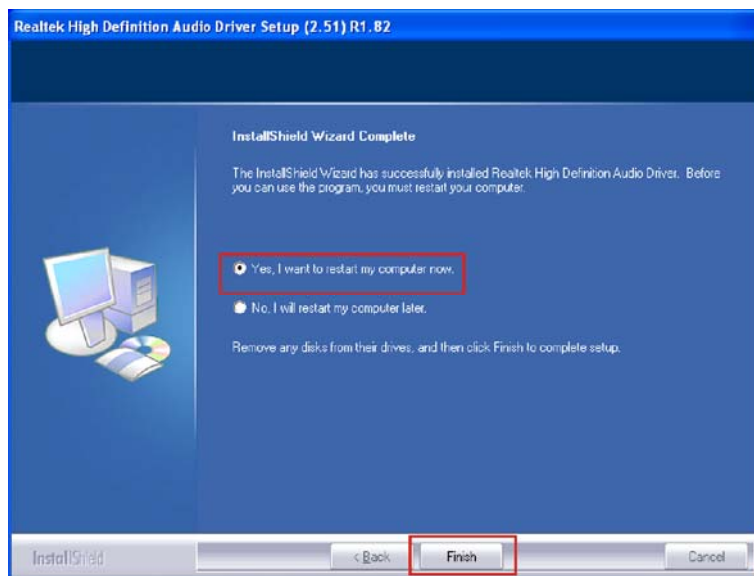
Figure 6-28: HD Audio Driver Installation Complete

Step 8: Select "**Yes, I wish to restart my computer now**" And click FINISH to exit the

InstallShield Wizard and restart the computer.

6.7 iSMM Installation

The iSMM (Intelligent System Management Module) allows hardware functions to be monitored from within the operating system. The iSMM can be set to sound an alarm when voltages, temperatures or fan speeds rise above or fall below the set limits.

Step 1: Access the driver list shown in Figure 6-3. (See **Section 6.2**)

Step 2: Click "**4-Audio**"

Step 3: The iSMM directory appears. (Figure 6-29)
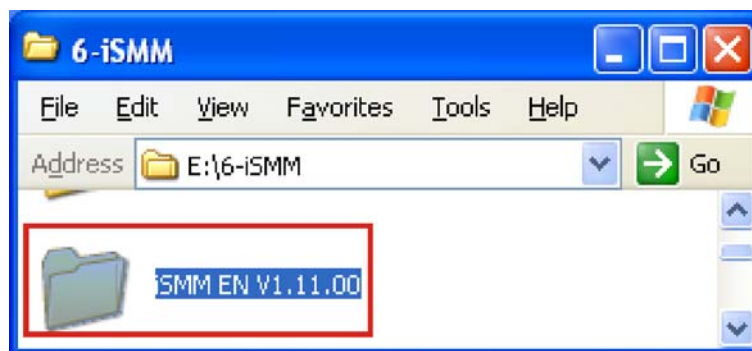
Figure 6-29: iSMM Directory

Step 4: Double click the **iSMM EN V1.11.00** directory icon. (Figure 6-29)

Step 5: The contents of the directory are displayed. (Figure 6-30)
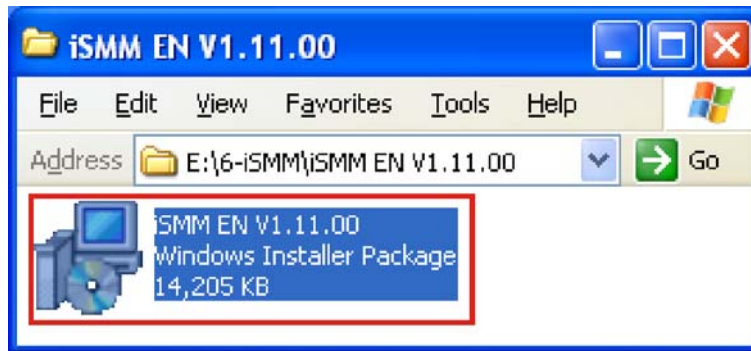
Figure 6-30: iSMM Installation File

Step 6: Double click the **iSMM EN V1.11.00** setup file.(Figure 6-30)

Step 7: The **iSMM InstallShield Welcome Screen** appears. (Figure 6-31)
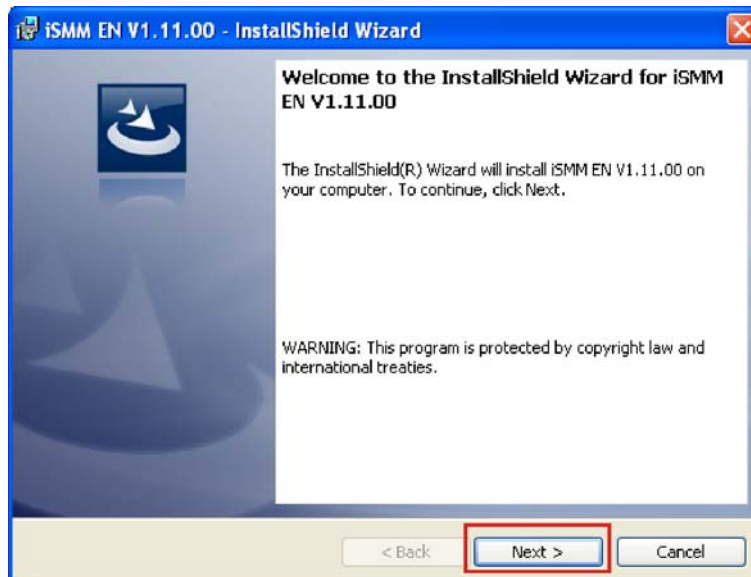
Figure 6-31: iSMM InstallShield Welcome Screen

Step 8: Click NEXT to continue.

Step 9: The **License Agreement** screen appears. (Figure 6-32)
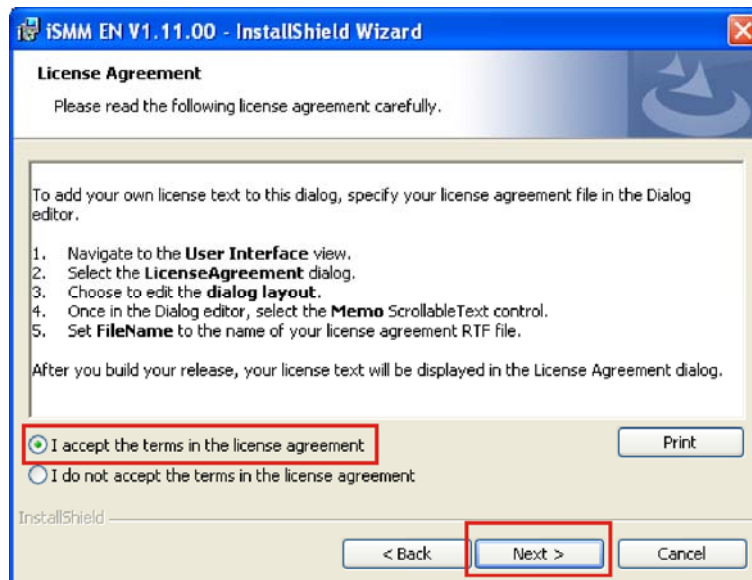
Figure 6-32: iSMM License Agreement

Step 10: Select "**I accept the terms of the license agreement.**" (Figure 6-32)

Step 11: Click NEXT to continue.(Figure 6-32)

Step 12: The **Customer Information** screen appears.(Figure 6-33)

Figure 6-33: iSMM Customer Information

Step 13: Fill in the "User Name" and "Organization" fields, which will be automatically

filled with the settings for the current user.(Figure 6-33)

Step 14: Click **Next** to continue.(Figure 6-33)

Step 15: The **Setup Type** screen appears. (Figure 6-34)
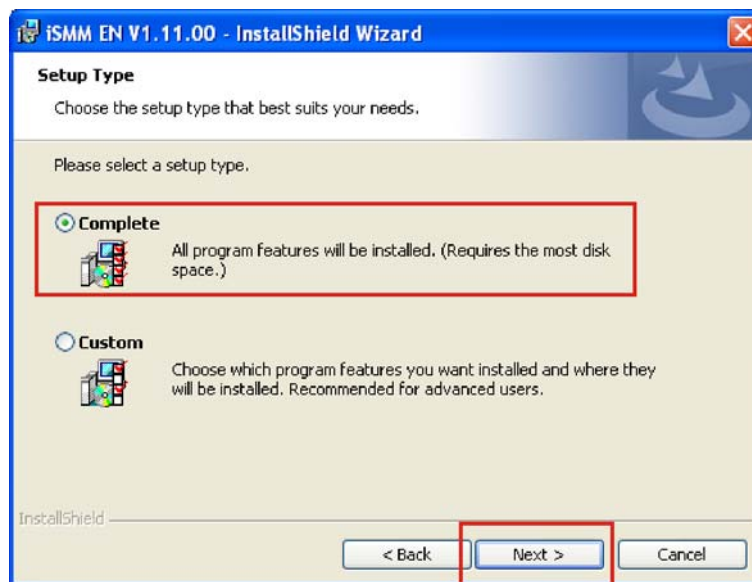
Figure 6-34: iSMM Setup Type

Step 16: Select "**Complete**" (Figure 6-34)

Step 17: Click NEXT to continue. (Figure 6-34)

Step 18: The **Installation Confirmation** screen appears. (Figure 6-35)
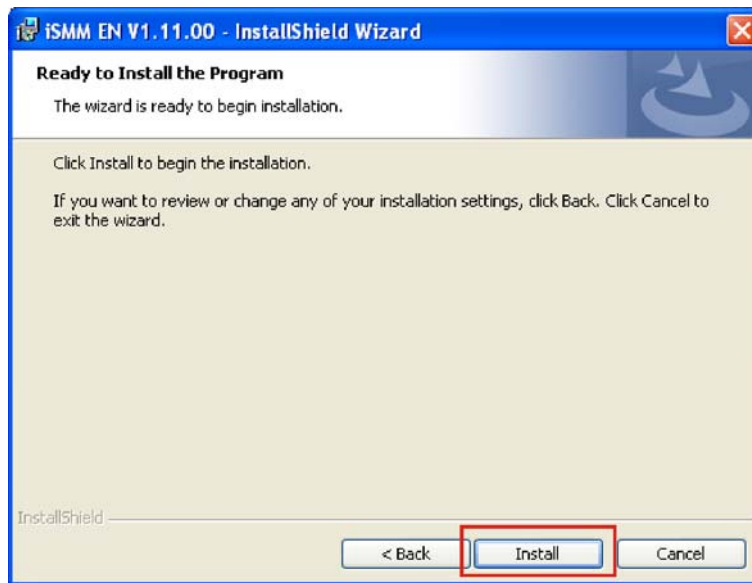
Figure 6-35: iSMM Installation Confirmation

Step 19: Click INSTALL to begin installing the drivers. (Figure 6-35)

Step 20: The InstallShield Wizard Completed appears when the drivers are finished

installing. (Figure 6-36)
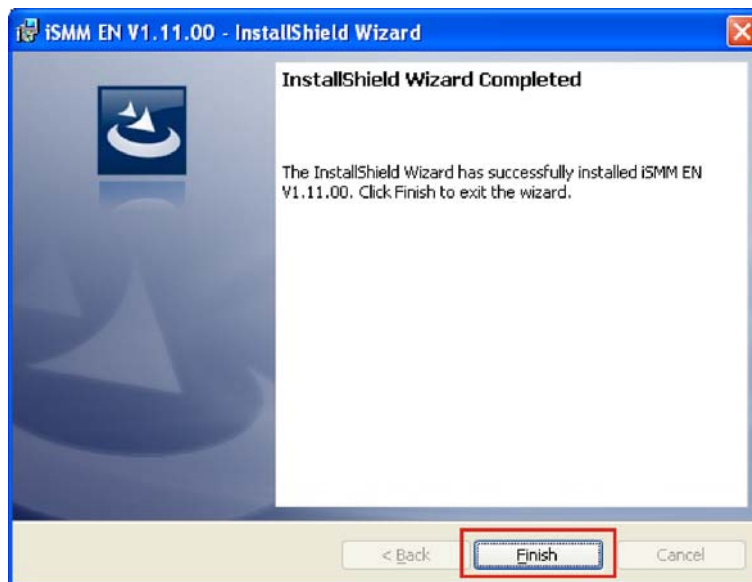
Figure 6-36: iSMM InstallShield Wizard Complete

Step 21: Click F<small>INISH</small> to exit the installation program.(Figure 6-36)

Step 22: The **Restart Confirmation** screen appears.(Figure 6-37)
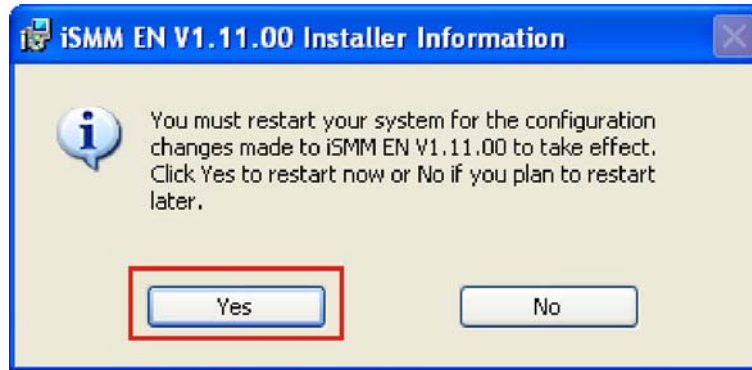
Figure 6-37: iSMM Restart Confirmation

Step 23: Select Y<small>ES</small> to restart the system, or N<small>O</small> to restart the system manually later.

Appendix

A

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

Appendix

B

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CompactFlash®	CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.

DMA   Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.

DIMM   Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.

DIO   The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

EHCI   The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.

EIDE   Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MB/s and 16.6 MB/s.

EIST   Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.

FSB   The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.

GbE   Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gb/s and complies with the IEEE 802.3-2005 standard.

GPIO   General purpose input

HDD   Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.

ICH   The Input/Ouput Controll Hub (ICH) is an Intel® Southbridge chipset.

IrDA   Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.

L1 Cache   The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.

L2 Cache   The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD   Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.

LVDS   Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.

POST   The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.

RAM   Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.

SATA   Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gb/s and the SATA II bus has data transfer speeds of up to 3.0 Gb/s.

S.M.A.R.T   Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.

UART   Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.

UHCI   The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.

USB   The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12 Mb/s data transfer rates and USB 2.0 supports 480 Mb/s data transfer rates.

VGA   The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

C

Digital I/O Interface

C.1 Introduction

The DIO connector on the PCISA-945GSE is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

For further information, please refer to the datasheet for the Super I/O chipset.

The BIOS interrupt call **INT 15H** controls the digital I/O.

INT 15H:

AH – 6FH
<u>Sub-function:</u>
AL – 8 : Set the digital port as INPUT
AL : Digital I/O input value

C.2 Assembly Language Sample 1

    MOV   *AX, 6F08H*   ;setting the digital port as input

    INT   *15H*   ;

AL low byte = value

AH – 6FH
Sub-function:
AL – 9   :Set the digital port as OUTPUT
BL   :Digital I/O input value

C.3 Assembly Language Sample 2

    MOV   *AX, 6F09H*   ;setting the digital port as output

    MOV   *BL, 09H*   ;digital value is 09H

    INT   *15H*   ;

Digital Output is 1001b

Appendix

D

Watchdog Timer

> **NOTE:**
>
> The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

✓ **NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer,
otherwise the system resets.

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

;

     MOV   AX, 6F02H   ;setting the time-out value

     MOV   BL, 30   ;time-out value is 48 seconds

     INT   15H

;

; ADD THE APPLICATION PROGRAM HERE

;

     CMP   EXIT_AP, 1   ;is the application over?

     JNE   W_LOOP   ;No, restart the application

     MOV   AX, 6F02H   ;disable Watchdog Timer

     MOV   BL, 0   ;

     INT   15H

;

; EXIT ;

Appendix
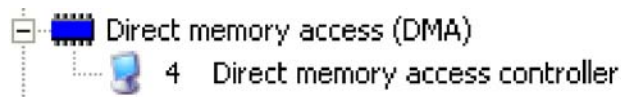
E

Address Mapping

E.1 Direct Memory Access (DMA)

Figure E-1: Direct Memory Access (DMA)

E.2 Input/Output (IO)
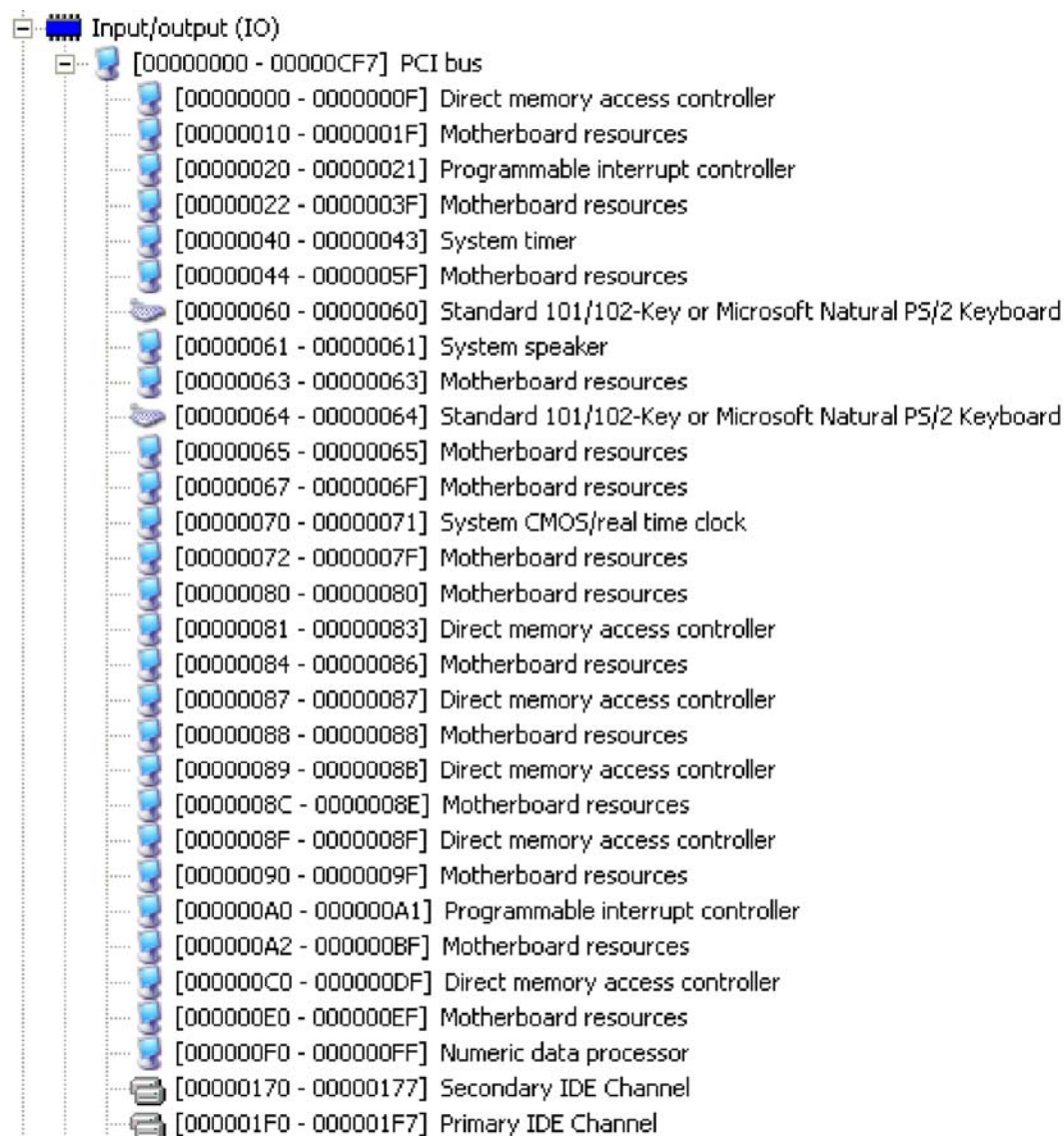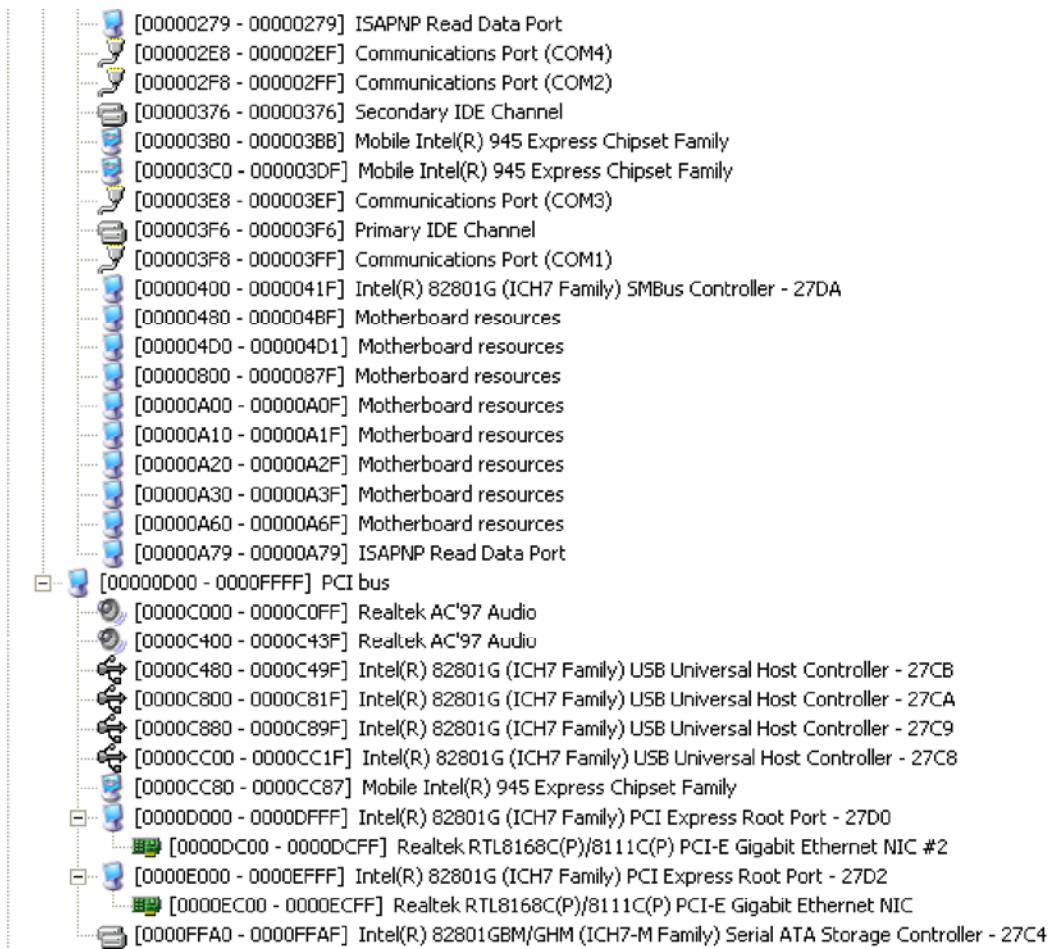

Figure E-2: Input/Output (1 of 2)

Figure E-3: Input/Output (2 of 2)

E.3 Interrupt Request (IRQ)

Figure E-4: Interrupt Request (IRQ)

E.4 Memory


```
Memory
    [00000000 - 0009FFFF]  System board
    [000A0000 - 000BFFFF]  PCI bus
        [000A0000 - 000BFFFF]  Mobile Intel(R) 945 Express Chipset Family
    [000C0000 - 000CFFFF]  System board
    [000D0000 - 000DFFFF]  PCI bus
    [000E0000 - 000FFFFF]  System board
    [00100000 - 3F7FFFFF]  System board
    [3F800000 - DFFFFFFF]  PCI bus
        [D0000000 - DFFFFFFF]  Mobile Intel(R) 945 Express Chipset Family
    [E0000000 - E3FFFFFF]  Motherboard resources
    [E4000000 - FED8FFFF]  PCI bus
        [FDE00000 - FDEFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
            [FDEF0000 - FDEFFFFF]  Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
        [FDF00000 - FDFFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
            [FDFF0000 - FDFFFFFF]  Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
        [FE880000 - FE8FFFFF]  Mobile Intel(R) 945 Express Chipset Family
        [FE93B400 - FE93B4FF]  Realtek AC'97 Audio
        [FE93B800 - FE93B9FF]  Realtek AC'97 Audio
        [FE93BC00 - FE93BFFF]  Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
        [FE940000 - FE97FFFF]  Mobile Intel(R) 945 Express Chipset Family
        [FE980000 - FE9FFFFF]  Mobile Intel(R) 945 Express Chipset Family
        [FEA00000 - FEAFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
            [FEAFF000 - FEAFFFFF]  Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
        [FEB00000 - FEBFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
            [FEBFF000 - FEBFFFFF]  Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
        [FEC00000 - FEC00FFF]  Motherboard resources
        [FED13000 - FED19FFF]  System board
        [FED1C000 - FED1FFFF]  Motherboard resources
        [FED20000 - FED3FFFF]  Motherboard resources
        [FED40000 - FED8FFFF]  Motherboard resources
    [FED90000 - FFFFFFFF]  System board
        [FEE00000 - FEE00FFF]  Motherboard resources
        [FFB00000 - FFBFFFFF]  Intel(R) 82802 Firmware Hub Device
        [FFC00000 - FFEFFFFF]  Motherboard resources
        [FFF00000 - FFFFFFFF]  Intel(R) 82802 Firmware Hub Device
```
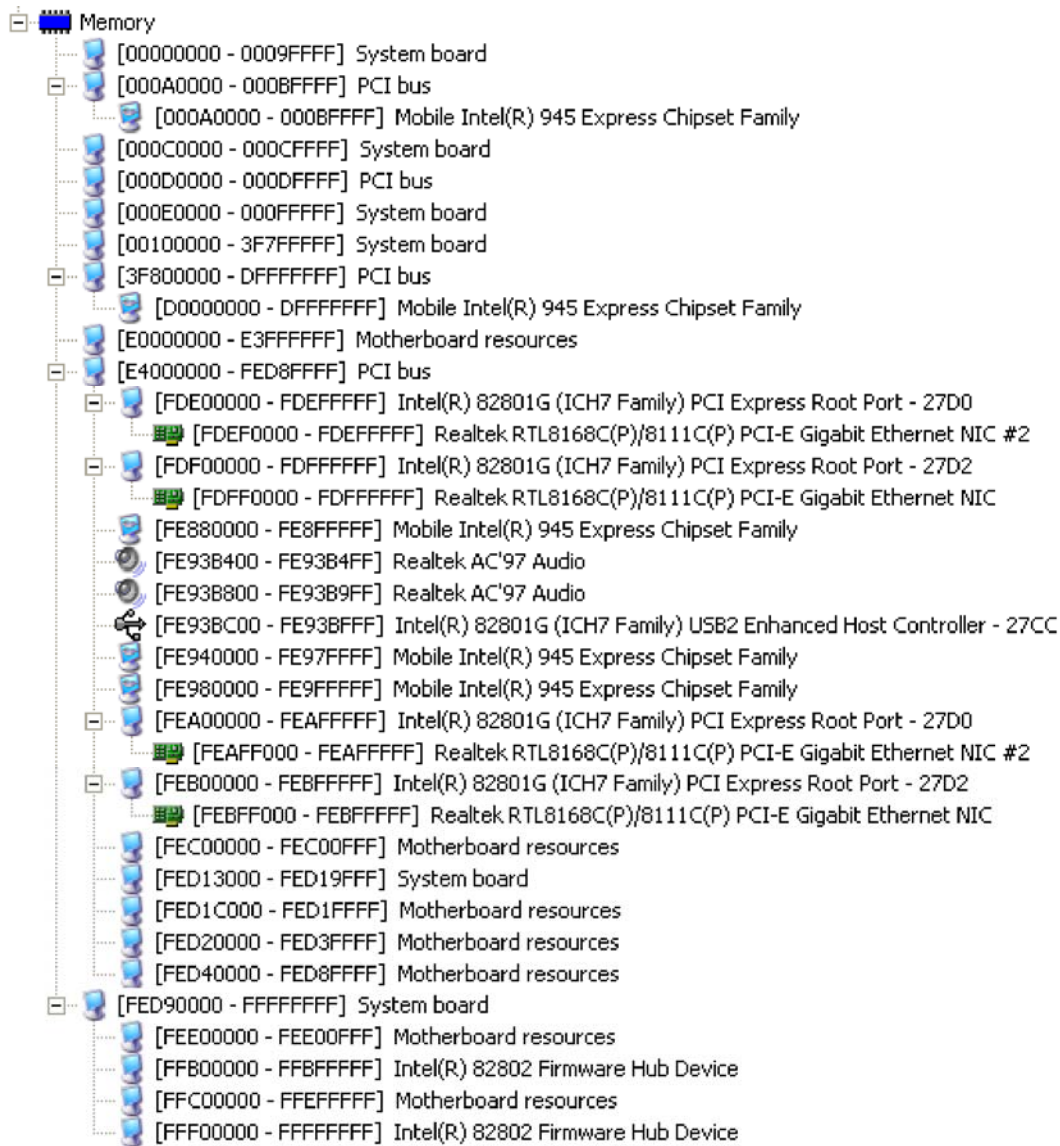
Figure E-5: Memory

Hazardous Materials Disclosure

F.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						